Five-Year Review Report

Fourth Five-Year Review Report
for
Smith's Farm
EPA ID KYD097267413

Brooks
Bullitt County, Kentucky

September 2011

Prepared By:
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For:
United States Environmental Protection Agency
Region 4
Atlanta, Georgia

Approved by:

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U.S. EPA, Region 4

Date: 9/19/11

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List of Acronyms

1.2-DCE	1,2-dichloroethene
µg/L	micrograms per liter
AOC	Administrative Order on Consent
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
CRDL	Contract Required Detection Limit
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
HDPE	High Density Polyethylene
IC	Institutional Control
KDEP	Kentucky Department of Environmental Protection
KPDES	Kentucky Pollutant Discharge Elimination System
LDPE	Low Density Polyethylene
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MDW	Main Drainage Way
mg/L	milligrams per liter
ng/L	nanograms per liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SVOCs	Semi-volatile Organic Compounds
TBC	To-Be-Considered
TCE	Trichloroethene
UAO	Unilateral Administrative Order
VOCs	Volatile Organic Compounds

Executive Summary

Introduction

The Smith's Farm site (the Site) is located in Brooks, Bullitt County, Kentucky. The Site originally consisted of an approximately 80-acre unpermitted former drum disposal area; an approximately 40-acre formerly permitted construction debris landfill; and several smaller, isolated disposal areas where unpermitted disposal of hazardous waste occurred over at least a 30-year period. The Site was used from the 1950s until 1989 for the disposal of local construction debris, municipal solid waste and commercial / industrial waste from businesses and manufacturing facilities in the Louisville area. Spent paint thinners, off-specification paints, paint booth sludges, metal shavings from machining operations, asbestos, off-specification epoxies, and waste motor and transmission fluids are some of the contaminated materials that were disposed of at the Site. Contaminants included a wide variety of volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) as well as heavy metals. The disposal activities in both areas of the Site resulted in contamination of ground water, sediment, soil, and surface water. The United States Environmental Protection Agency (EPA) proposed the Site to the National Priorities List (NPL) in October 1984 and finalized the Site on the NPL in June 1986. The Site is being addressed in two Operable Units (OUs): OU1 (unpermitted former drum disposal area) and OU2 (formerly permitted inert industrial wastes from landfill and smaller isolated disposal areas). The triggering action for this Five-Year Review (FYR) was the signing of the previous FYR on September 20, 2006.

Remedy Components

A Record of Decision (ROD) describing the cleanup approach for OU1 was issued in 1989 and amended in 1991. The cleanup approach for OU1 addressed containment of contaminated soil, sediment, ground water in the surficial aquifer, and drums in the vicinity of the unpermitted drum disposal area. The ROD describing the cleanup approach for OU2 was issued in 1993. The cleanup approach for OU2 addressed landfill wastes, leachate, leachate sediment, surface soil, ground water and surface water.

Although the RODs did not define remedial action objectives (RAOs), the remedial actions in the 1989 OU1 ROD were selected to:

- Reduce risks posed by direct contact with study area soils contaminated with polychlorinated biphenyls (PCBs) and lead, study area sediments contaminated with polycyclic aromatic hydrocarbons (PAHs) and PCBs, and inhalation of organics and PCBs from surface water within the study area.
- Collect and treat leachate to eliminate or greatly reduce the accumulation of leachate that might still be generated as a result of leaking, buried drums within Area A. (The contaminant source area was determined to be a large area of buried drums on both sides of the ridge in the southern portion of the Remedial Investigation (RI) study area).
- Contain contaminants within Area B (a smaller, additional drum burial area just north of Area A), thereby eliminating or greatly reducing infiltration of rainfall into the surface water and surficial ground water, as well as the direct contact exposure pathways.

- Design and construct the cap to minimize the amount of leachate generation, promote drainage, minimize erosion of the cover, and provide long-term minimization of migration of liquids through the underlying drums and soil.

The major tasks comprising the selected remedy in OU1 ROD (modified by the September 1991 ROD Amendment) included:

- Excavation of contaminated soil, surface drums, buried drums and fill material from the main OU1 area of contamination.
- Excavation of contaminated sediments from the intermittent valley streams.
- Construction of an 11-acre landfill at the main OU1 area of contamination.
- On-site base-catalyzed thermal desorption of the excavated contaminated soils and sediments.
- Solidification and on-site disposal of treated soils and sediments that have excessive concentrations of lead, and on-site disposal of soils and sediments that do not have excessive levels of lead.
- Installation of retaining walls at the east and west toes of the hill that represents the main OU1 area of contamination, and consolidation and contouring of treated backfill and clean material in that area.
- Installation of east and west leachate collection and conveyance lines in the new landfill, and installation of leachate collection tanks at the southernmost end of the new landfill.
- Installation of a Resource Conservation and Recovery Act (RCRA)-type cap and cover system on the new landfill, construction of perimeter fences with warning signs, and imposition of land use deed restrictions.
- Monitoring of shallow ground water for 30 years.

The purpose of the 1993 OU2 remedy was to reduce the risk associated with exposure to the contaminated on-site surface soils; contaminated on-site surface and ground waters; contaminated on-site stream sediments; and contaminated, on-site leachate and leachate sediments.

The major tasks comprising the selected remedy in the OU2 ROD included:

- The extinguishing of the subsurface landfill thermal anomalies, if necessary.
- The consolidation within the landfill of peripheral, contiguous areas of landfill material.
- The installation of a leachate collection system at the bedrock surface along the entire east and south sides of the landfill, which diverts leachate to a collection tank and then to a multi-stage treatment system which then discharges treated, cleaned liquid to the Unnamed Tributary, and which will be operated for at least 30 years after construction is complete.
- The installation of a multi-layer, RCRA-type cap and cover system with attendant run-on and run-off systems.
- The installation of perimeter fencing, lockable gates, and warning signs, and the imposition of deed restrictions and water use restrictions.
- Monitoring of shallow ground water and treatment plant effluent for 30 years.

Technical Assessment

The review of documents, applicable or relevant and appropriate requirements (ARARs), risk assumptions and the site inspection indicate that the Site's remedy is functioning as intended by site documents. The cleanup actions for OU1 were completed in November 1995 and operation and maintenance (O&M) activities began immediately thereafter. The OU1 cleanup activities resulted in the thermal treatment of 21,000 cubic yards of contaminated soils and the construction of an 11-acre capped landfill with a leachate collection system. The cleanup actions for OU2 were completed in September 1998 and resulted in the proper consolidation and capping of the 40-acre, formerly permitted landfill, and the construction of a leachate treatment plant. The leachate collection tanks at the OU1 area were connected to the influent feed of the leachate treatment plant via a force main double-walled pipeline. The connection eliminated the need to haul OU1 leachate by truck to the OU2 leachate treatment plant or to an off-site disposal facility. OU1 and OU2 are each secured and fenced and a security camera system is in place to prevent vandalism and trespassing.

Institutional controls in the form of a 1999 restrictive covenant prevent residential or commercial development or any activity that will result in disturbance of the land surface. The restrictive covenant also restricts ground water and surface water use on site, but it is unclear if contaminated ground water is affecting surface water. A 2009 Explanation of Significant Differences (ESD)was prepared for the Site that reduced the scope of the land use restriction to the fenced areas of the two OUs plus an 80-foot buffer around each fenced area. However, an updated restrictive covenant was not located at the Bullitt County records office, so the 1999 restrictive covenant remains in effect across the entire property. If the land use is proposed to change to residential in the area that is within the property boundaries but outside of the OU fenced areas, and that property is found to be contaminated, then the deed restriction will need to be modified or terminated and an Environmental Covenant pursuant to KRS 224 Subchapter 80 will need to be filed with approval of both EPA and Kentucky Department of Environmental Protection (KDEP). In addition, the existing 1999 restrictive covenant is not associated with land transfers and should be referenced in future transfers and deeds related to this property.

On May 28, 2008, drums were observed at a location outside of the capped landfill area at OU1. It was initially thought to be six to 13 drums, but when the drum characterization and removal was completed in September 2009, a total of 319 drums, scraps and carcasses were removed. If drums are found in the future, EPA and KDEP should immediately be notified.

During the FYR site inspection, additional exposed drums were observed outside of the OU1 fenced area. The potentially responsible party (PRP) should work with EPA and KDEP to perform a removal of the drums and contaminated soils associated with the drums. The O&M contractor has had difficulty gaining access from the property owner to the Site outside of the fenced areas. Access agreements between the PRP and the property owner should be evaluated to ensure the PRP has access to any drums found outside of the fenced landfill areas.

The Site and portions of the Site have changed ownership since remediation started and the site property area has variously been described as 560 acres, 500 acres, 480 acres, and 460 acres in

site documents. Also, the OU boundaries have not been described in a consistent fashion. The current fenced area at OU1 is not collocated with the original OU1 boundary. The current, accurate site property and OU boundaries should be identified.

The ROD identified Kentucky Pollutant Discharge Elimination System (KPDES) 401 KAR 5:005 as an ARAR for surface water. A letter from the State on July 10, 1997 indicated that KPDES permit requirements were waived, contingent on site effluent meeting the criteria in the letter's attachment. In addition to the risk-based standards for 11 constituents identified in the ROD, the 1997 letter specified effluent standards for an additional 26 contaminants that must be met at the Site. The effluent standards have been updated since the ROD was issued and the Site is currently compliant with the updated effluent standards.

The OU2 ROD states that ground water monitoring requirements must comply with Sections 10 and 11 of 401 KAR 34:060, which states that "[s]hould the ground water monitoring at the Site indicate that the [maximum contaminant levels/maximum contaminant level goals (MCLs/MCLGs)] are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs and MCLGs." VOCs and SVOCs have been detected above MCLs in ground water under the Site and residential use is being considered outside of the fenced area at the Site. The Site should be evaluated to determine if a ground water corrective action is necessary. Should a structure be built on the Site (e.g., a residence), the vapor intrusion potential should be evaluated.

EPA's dioxin reassessment has been developed and undergone review over many years with the participation of scientific experts in EPA and other federal agencies, as well as scientific experts in the private sector and academia. The Agency followed current cancer guidelines and incorporated the latest data and physiological/biochemical research into the assessment. The results of the assessment have currently not been finalized and have not been adopted into state or federal standards. EPA anticipates that a final revision to the dioxin toxicity numbers may be released by the end of 2011. In addition, EPA has proposed to revise the interim preliminary remediation goals (PRGs) for dioxin and dioxin-like compounds, based on technical assessment of scientific and environmental data. However, EPA has not made any final decisions on interim PRGs at this time. Therefore, the dioxin toxicity reassessment for the Site will be updated during the next FYR.

Conclusion

The remedy at both OU1 and OU2 currently protects human health and the environment in the short term because drums and contaminated soils were consolidated and capped on site, institutional controls are in place to prevent inappropriate use of the land, and nearby residents are on municipal water. However, in order for the remedy to be protective in the long term, the following actions need to be taken to ensure long-term protectiveness:

- Remove drums found during the site inspection and any contaminated soil associated with the drums.
- Evaluate the Site to determine if contaminated ground water is affecting the surface water.

- Evaluate the Site to determine if a ground water corrective action is necessary.
- Evaluate the potential for vapor intrusion in a hypothetical structure built on the Site outside of the fenced areas (using modeling).
- Define the current, accurate site property boundary.
- Using historical documents, resolve OU1 and OU2 area and boundary discrepancies and map the original, historical boundaries in future annual O&M reports and any other Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from CERCLIS)*: Smith's Farm		
EPA ID *(from CERCLIS)*: KYD097267413		
Region: 4	**State:** KY	**City/County:** Brooks/Bullitt

SITE STATUS	
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)	
Remediation status (choose all that apply): ☐ Under Construction ☒ Operating ☒ Complete	
Multiple OUs?* ☒ YES ☐ NO	**Construction completion date:** 9/23/1998
Has site been put into reuse? ☐ YES ☒ NO	

REVIEW STATUS	
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency	
Author name: Johnny Zimmerman-Ward and Rhode Bicknell	
Author title: Associates	**Author affiliation: Skeo Solutions**
Review period**: 01/20/2011 to 09/20/2011	
Date(s) of site inspection: 04/16/2011	
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion	
Review number: ☐ 1 (first) ☐ 2 (second) ☐ 3 (third) ☒ Other (specify) 4 (fourth)	
Triggering action: ☐ Actual RA On-site Construction at OU# ☐ Actual RA Start at OU# ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify)	
Triggering action date *(from CERCLIS)*: 9/20/2006	
Due date *(five years after triggering action date)*: 9/20/2011	

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in CERCLIS.]

Five-Year Review Summary Form (continued)

Issues:
1) Remains of drums outside the fenced area were observed during the site inspection.
2) It is unknown if contaminated ground water is affecting surface water.
3) The OU2 ROD states that ground water monitoring requirements must comply with Sections 10 and 11 of 401 KAR 34:060, which states that "[s]hould the ground water monitoring at the Site indicate that the MCLs/MCLGs are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs and MCLGs." Contaminants are detected above MCLs and are increasing at some monitoring wells in site ground water sampling.
4) VOCs have been detected in site ground water monitoring wells and the future use of portions of the Site might be residential. The potential for vapor intrusion has not been evaluated.
5) The Site and portions of the Site have changed ownership since remediation started and the site property area has variously been described as 560 acres, 500 acres, 480 acres, and 460 acres in site documents.
6) Historical documents, including the 1989 remedial investigation (RI), describe OU1 as an 80 acre disposal area and OU2 as a 37.5 acre landfill. More recent documents refer to OU1 and OU2 as a combined total of 80 acres. The OU boundaries are not described in a consistent fashion.

Recommendations:
1) Remove drums found during the site inspection and any contaminated soil associated with the drums.
2) Evaluate the Site to determine if contaminated ground water is affecting the surface water.
3) Evaluate the Site to determine if a ground water corrective action is necessary. Further characterization of the ground water contamination plume may be part of the evaluation.
4) Evaluate the potential for the vapor intrusion in a hypothetical structure built on the Site outside of the fenced areas (using modeling).
5) Define the current, accurate site property boundary.
6) Using historical documents, resolve OU1 and OU2 area and boundary discrepancies and map the original, historical boundaries in future annual O&M reports and any other CERCLA documents.

Protectiveness Statement(s):

The remedy at both OU1 and OU2 currently protects human health and the environment in the short term because drums and contaminated soils were consolidated and capped on site, institutional controls are in place to prevent inappropriate use of the land, and nearby residents are on municipal water. However, in order for the remedy to be protective in the long term, the following actions need to be taken to ensure long-term protectiveness:

- Remove drums found during the site inspection and any contaminated soil associated with the drums.
- Evaluate the Site to determine if contaminated ground water is affecting the surface water.
- Evaluate the Site to determine if a ground water corrective action is necessary.
- Determine the potential for vapor intrusion potential in a hypothetical future structure built on the site outside of the fenced areas.
- Define the current, accurate site property boundary.
- Using historical documents, resolve OU1 and OU2 area and boundary discrepancies and map the original, historical boundaries in future annual O&M reports and any other CERCLA documents.

Five-Year Review Summary Form (continued)

Other Comments:

Environmental Indicators
- Current human exposures at the Site are under control.
- Not a ground water site.

Are Necessary Institutional Controls in Place?
☒ All ☐ Some ☐ None

Has the Site Been Designated as Site-Wide Ready for Anticipated Use?
☒ Yes ☐ No

Fourth Five-Year Review Report
for
Smith's Farm Superfund Site

1.0 Introduction

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings and conclusions of FYRs are documented in FYR reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

> "If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

> "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action."

Skeo Solutions, an EPA Region 4 contractor, conducted the FYR and prepared this report regarding the remedy implemented at the Smith's Farm site (the Site) in Brooks, Bullitt County, Kentucky. This FYR was conducted from January to September of 2011. EPA is the lead agency for developing and implementing the remedy for the Potentially Responsible Party (PRP)-financed cleanup at the Site. The Kentucky Department of Environmental Protection (KDEP), as the support agency representing the Commonwealth of Kentucky, has reviewed all supporting documentation and provided input to EPA during the FYR process.

This is the fourth FYR for the Site. The triggering action for this statutory review is the 2006 FYR. The FYR is required due to the fact that hazardous substances, pollutants or contaminants

remain at the Site above levels that allow for unlimited use and unrestricted exposure. The Site consists of two Operable Units (OUs), both of which are addressed in this FYR.

2.0 Site Chronology

Table 1 lists the dates of important events for the Site.

Table 1: Chronology of Site Events

Event	Date
Landfill waste operation began	1950s
EPA discovered contamination	February 1, 1980
EPA completed preliminary assessment	June 1, 1982
EPA-lead removal started	June 18, 1984
Commonwealth of Kentucky performed site inspection	August 1, 1984
EPA-lead removal completed	August 17, 1984
EPA proposed Site to National Priorities List (NPL)	October 15, 1984
Site listed on NPL	June 10, 1986
EPA issued notice letters to PRPs and started Remedial Investigation/Feasibility Study (RI/FS)	March 15, 1987
EPA completed RI/FS	April 15, 1987
Combined RI/FS for OU1 started	April 3, 1989
Section 107 litigation started	September 7, 1989
EPA completed combined RI/FS for OU1 and signed Record of Decision (ROD) for OU1	September 29, 1989
PRP started RI/FS for OU2	November 9, 1989
EPA signed an Administrative Order on Consent (AOC) for OU1	November 13,1989
EPA started remedial design/remedial action negotiations for OU1	December 20, 1989
EPA completed remedial design/remedial action negotiations and signed a unilateral AOC for OU1	March 14, 1990
PRP remedial design started for OU1	May 4, 1990
EPA performed a site-wide removal assessment and signed a ROD amendment for OU1	September 30, 1991
PRP remedial design for OU1 completed	April 4 1992
PRP started remedial action for OU1	May 20, 1993
PRP completed RI/FS and EPA signed ROD for OU2	September 17, 1993
EPA issued notice letters to PRPs for OU1 and remedial action/remedial negotiations for OU2 started	October 29, 1993
EPA completed remedial action/remedial negotiations and signed a unilateral AOC for OU2. PRP completed remedial action for OU1.	April 22, 1994
PRP started remedial design for OU2	June 1, 1994
PRP completed remedial design and started remedial action for OU2	March 13, 1996
Operation and maintenance (O&M) for OU1 started	April 22, 1996
Section 107 litigation completed	October 10, 1997
EPA signed AOC	January 23, 1998
Preliminary close-out report	September 23, 1998
First FYR completed	September 30, 1998
Restrictive covenant filed with Bullitt County	March 15, 1999
PRP completed remedial action and O&M started for OU2	March 30, 1999
Second FYR completed	September 30, 2001
Third FYR completed	September 20, 2006
EPA issued an Explanation of Significant Differences (ESD)	November 3, 2009

3.0 Background

3.1 Physical Characteristics

The Site is located in a rural part of Bullitt County, Kentucky. The Site is approximately 2.5 miles southwest of the town of Brooks, 3.5 miles northwest of the city of Shepherdsville and approximately 12 miles south of Louisville (Figure 1). The Site property is bordered on the north and west by forested hills, on the south by a residential area along Pryor Valley Road, and on the east by a residential area. The Site includes an 11-acre capped landfill (OU1) and an approximately 40-acre capped landfill (OU2). OU1 is the formerly unpermitted drum disposal area in the northern portion of the property and OU2 is the old Smith's Landfill on the southern portion of the property, which was permitted by KDEP (Figure 2). The 498-acre Bullitt County parcel ID for the property is 03500000029.

The Site and portions of the Site have changed ownership since remediation started and the site property area has variously been described as 560 acres, 500 acres, 480 acres, and 460 acres in site documents. The OU boundaries have also not been historically described in a consistent fashion.

The Unnamed Tributary, an intermittent tributary, and the Floyd's Fork stream system run from the northernmost portion of the Smith's Farm property to the southernmost edge of that property and then off site into Bluelick Creek. The Unnamed Tributary drains both major disposal areas. At the southeast edge of the landfill along the access road are several buildings, one of which houses the leachate treatment system. Along the east side of the landfill near the Unnamed Tributary, six leachate seeps have been identified. These outbreaks flow out of the earthen slope or from the bank of the Tributary. Another seep breaks out onto a low-lying area in the southwest quadrant of the landfill.

The dominant vegetation type in the area is mixed deciduous forest, which is dominated by a large diversity of broad-leaved trees. The area has sharp slopes and narrow ridges that allow for a variety of habitats and species. The Site is heavily vegetated with mixed pine and hardwood forest growth except for the landfill, which is covered with grass. The terrestrial fauna consist of small mammals, reptiles, birds and amphibians associated with second and third growth forests in the area.

Soils of the area are loamy on the slopes and ridges, and gravelly loam in the small tributary floodplains of the Site. The bedrock streambed is covered with sand, gravel and cobbles. Typically, the upper reaches of the streams have no flowing water. High water flows occur during storm events and are short in duration.

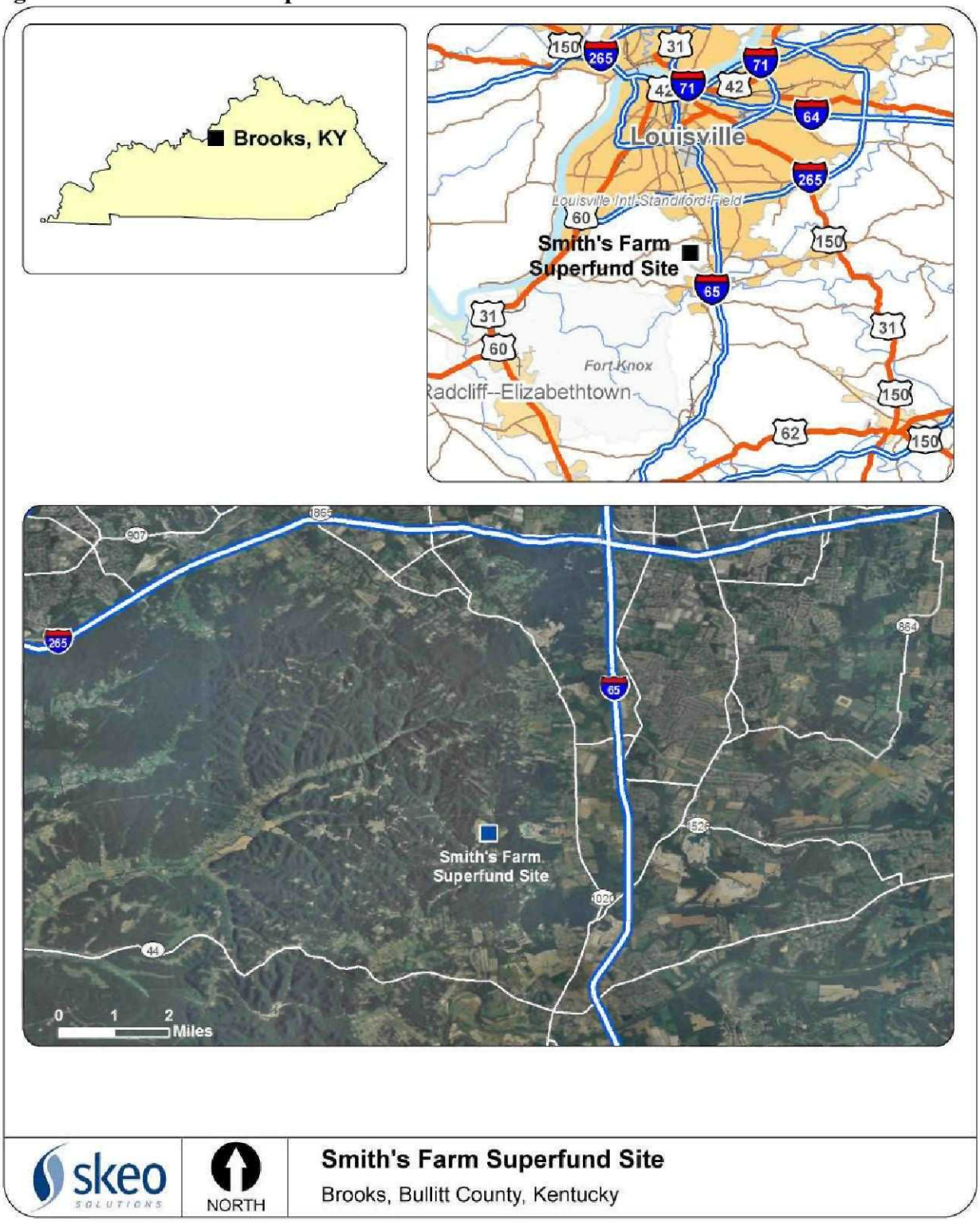
Underlying the Site is the Mississippian-age Borden formation, which includes, in descending order, the Holtzclaw Siltstone Member, the Nancy Member (silty shale), the Kenwood Siltstone Member and the New Providence Shale Member. The depth of the bedrock on site is commonly 4 to 6 feet and rock outcrops have been observed. Underlying the Borden Formation is the Devonian-age New Albany shale, which overlies

the Silurian-age Louisville Limestone. The Silurian and Devonian-age rocks crop out approximately 1 mile east of the Site. The rocks underlying the Site are nearly horizontal; the regional dip of the top of the New Albany shale is to the west at about 110 feet per mile. No major faults have been mapped by the U.S. Geological Survey in this part of Kentucky. Some joints and possibly small-scale faults are expected to be present in the rocks underlying the Site.

Previous observations suggest that the New Providence Shale and the New Albany Shale inhibit vertical percolation, providing a natural barrier to the limestone aquifer below, which serves as the principal uppermost aquifer in the area. Ground water may occur within isolated fractures, formational contacts and bedding planes in the shales resulting from vertical infiltration of water recharge, but these zones do not appear to be very interconnected. This water does not appear to be under any artesian pressure. Another hydrogeologic system in the area is the alluvial valley and surficial soil/weathered bedrock setting. Water flow discharges into the alluvial valley deposits, as evidenced by numerous flowing leachate outbreaks observed along the Unnamed Tributary streambank. Flow within the alluvial water table aquifer is controlled by topography (Figure 5). Some ground water seems to be flowing into OU2 laterally from the northwestern side of the landfill.

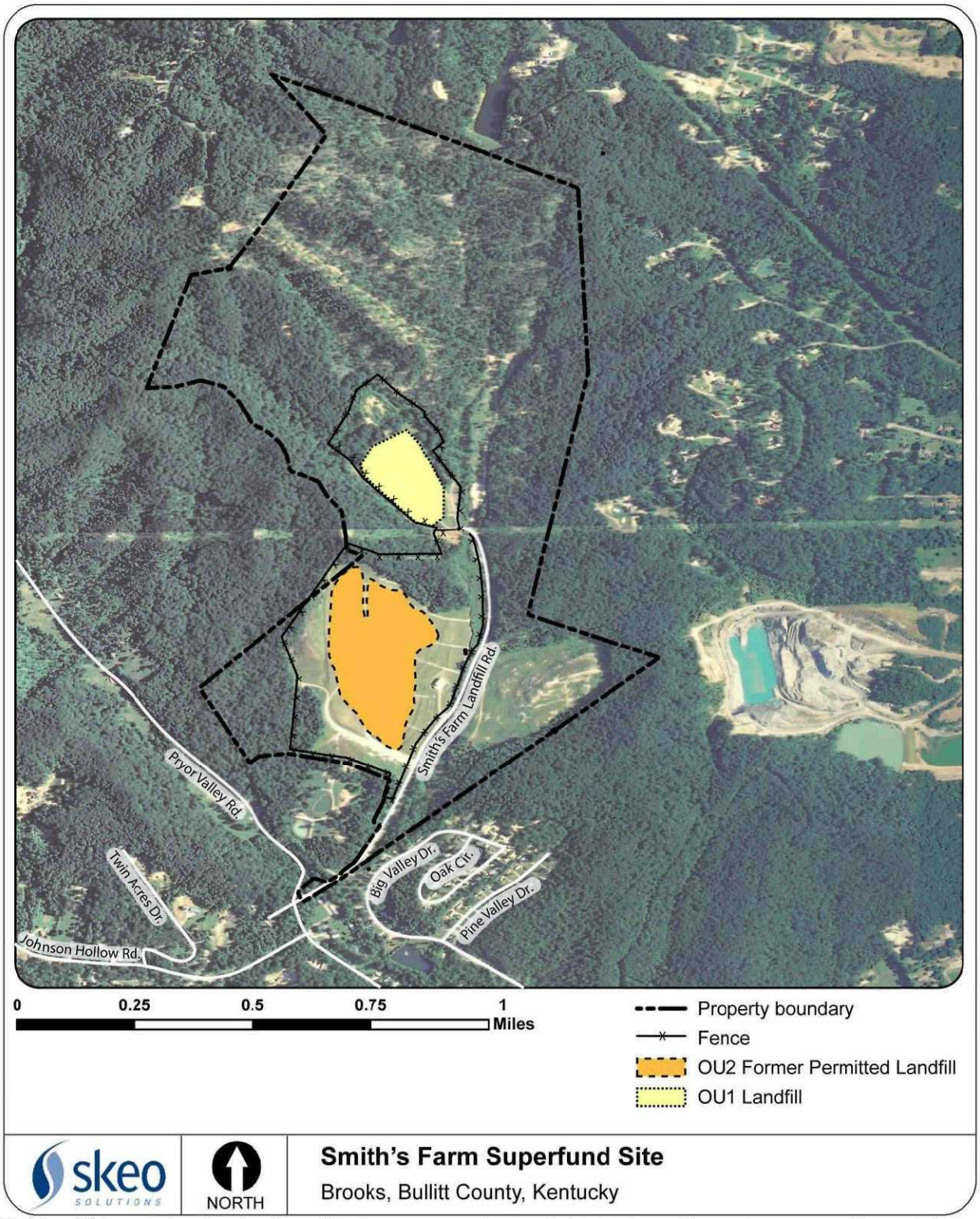
It seems likely that the majority of recharge water flows laterally and discharges into the major valley alluvial aquifers. The volume of water present in the shale and the rate of recharge are considerably less than the confined limestone aquifer below. The potential for vertical migration of significant quantities of leachate present within the landfill through the thick shale sequences to the limestone aquifer is not significant.

Figure 1: Site Location Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site, and is not intended for any other purpose.

Figure 2: Detailed Site Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site, and is not intended for any other purpose.

3.2 Land and Resource Use

The Site is surrounded by a mixture of industrial, agricultural, commercial and residential areas in a predominantly forested rural land. There is forested land north and west of the Site. Residences are located to the east and south of the Site. There are several educational and medical centers within a range of 3 miles of the Site, including a medical center 1 mile from the Site and an elementary and middle school 2 miles from the Site.

The area surrounding the Site is generally not suitable for farming or forestry, because the hills would make it difficult to perform either activity. The hills on the Smith's Farm property have steep-sloped sides and there is little flat area between slopes. The Site property was purchased by S&S Land Development Group in 2006 and has been selectively logged since the 2006 FYR with the intent of selling tracts of land for residential development. The ground water is classified as Class III by EPA's Ground Water Classification System. Water-bearing zones containing Class III ground water typically are not considered to be potential drinking water sources. Nearby residents are on municipal water.

S&S Land Development Group submitted an EPA-approved Revised Site Development Plan (Linebach Funkhouser, 2007) dated September 26, 2007 that detailed the proposed development and construction activities at the property. Prior to the initiation of site activities, S&S Land Development Group relocated the security fencing from the east side of Smith's Farm Road to the west side to allow construction traffic to access the Site without entering the restricted areas of the landfill. The first phase of development, tree harvesting, was initiated in November 2007 and was completed in November 2008. S&S Land Development Group also constructed sediment and stormwater retention basins.

3.3 History of Contamination

The Site originally consisted of an 80-acre unpermitted former drum disposal area; an approximately 40-acre formerly permitted construction debris landfill; and several smaller, isolated disposal areas where unpermitted disposal of hazardous waste occurred over at least a 30-year period. The proximity of industries in and around Louisville and the need of those industries to dispose of their wastes in a cost-effective manner resulted in the unpermitted and permitted disposal of commercial wastes in two major areas and several smaller areas at the Site. Some of the Site's ravines served as disposal "ditches" for construction debris, old household appliances, auto bodies, unsalvageable metallic industrial equipment, used tires, used drums, drummed wastes, and uncontained liquid and solid wastes. The Smith's Landfill area, which was a hilly ridge with a ravine on each side, was permitted by the Commonwealth of Kentucky to accept inert industrial wastes from November 1973 to May 1989, although the landfill area had industrial waste placed in it beginning in the 1950s. In addition, the permit was not in effect continuously and several violations occurred. The landfill was operated by the property owner, Mr. Leonard O. Smith, Sr., until his death in 1969, and by his son, Harlan Smith, until his death in 1978. The landfill was then operated by Buddy Mobley until its closure.

The permit for the landfill expired on May 10, 1989. The Commonwealth of Kentucky determined that the permit should not be renewed because: (1) a completed permit application had not been received (Kentucky Revised Statutes Section 224.855); (2) hazardous substances had been released from the permitted landfill and therefore remedial action to control the release(s) was required (Kentucky Revised Statutes 224.877); and (3) information required in order for the Commonwealth to re-evaluate the permit's renewal would be available only through a site study comparable to a Superfund Remedial Investigation (401 Kentucky Administrative Regulations 47:020 Section 5).

3.4 Initial Response

In 1983, an unpermitted drum disposal area (OU1) was discovered by KDEP. KDEP subsequently requested that EPA investigate the Site. In April 1983, the NUS Corporation, under contract to EPA, conducted a magnetometer survey of the drum disposal area. This survey provided an indication of the location and lateral extent of probable buried drums in the unpermitted portion of the Site. In April 1984, representatives of EPA's Region 4 Emergency Response and Control Section, the Environmental Response Team, the Technical Assistance Team and KDEP visited the Site and collected samples of waste from several drums in the OU1 area. From June 1984 until mid-August 1984, EPA removed approximately 6,000 surface drums. Of these 6,000 drums, 2,000 contained hazardous waste and 200 contained polychlorinated biphenyl (PCB)-contaminated waste. Also, 15,000 gallons of flammable liquids were removed. In June 1984, EPA notified the PRPs of the removal action activities being performed at the Site. The Site was proposed to the National Priorities List (NPL) in October 1984 and its listing was finalized in June 1986. In the fall of 1989, a complaint was filed against four major PRPs for recovery of EPA's removal costs.

During the 1980s, the landfill owner, Mrs. Mary Ruth Smith, contracted for the installation of a small leachate collection and recirculation system at the landfill at the insistence of the Commonwealth. Leachate lines of perforated plastic pipe were installed in ditches at the overburden/bedrock interface on the southeastern and southern sides of the landfill. The collected leachate went to a surge/collection tank and then to a large pump, from which it was pumped up to the central part of the landfill where it was sprayed onto the surface of the landfill from several vertical plastic pipes. The system was used only intermittently and then was shut down before the OU1 Remedial Investigation (RI) because of air emissions problems and complaints from residents of the mobile home community to the south of the landfill.

Also during the 1980s, in an attempt to dispose of large volumes of scrap wood, the landfill operator reportedly set piles of wood debris on fire in the northeast and northwest quadrants of the landfill. Later the operator buried the smoldering wood debris in an attempt to smother the fires. The attempt to smother the fires was not completely successful and over the next few years the operator made subsequent attempts to smother the subsurface combustion by bulldozing the areas.

3.5 Basis for Taking Action

Through initial investigations of the Site, EPA determined that the following contaminants were present in waste samples collected during exploratory trenching: benzene, toluene, ethylbenzene, xylenes, trichloroethylene, ketones, PCBs, and various volatile organic compounds (VOCs). Contaminants in leachate and leachate sediment included aluminum, arsenic, barium, cadmium, calcium, iron, lead, magnesium, manganese, sodium, zinc, VOCs and semi-volatile organic compounds (SVOCs). These contaminants posed the greatest risk to human health through dermal contact.

The 1989 OU1 Remedial Investigation/Feasibility Study (RI/FS) determined that leachate seeping from the permitted landfill contained several VOCs (i.e., chlorinated aliphatics, ketones, and monocyclic aromatics) and heavy metals. The Unnamed Tributary stream sediments were contaminated by extractable organic compounds (i.e., polycyclic aromatic hydrocarbons (PAHs)) and heavy metals, which are attributable to releases from the permitted landfill and the unpermitted drum disposal area. Soil samples collected from a location next to the landfill were also contaminated with extractable organic compounds. The primary exposures associated with OU1 were surface soils contacted by trespassers, stream sediments contacted by trespassers, and surface water contacted by trespassers.

The 1993 OU2 RI/FS determined that the primary exposures associated with OU2 were: (1) leachate and leachate sediments emanating from the landfill; (2) surface waters receiving the landfill leachate; (3) shallow ground water in the overburden; (4) dust contaminated with heavy metals from the surface of the landfill; (5) potential air emissions from subsurface thermal anomalies in the landfill; and (6) on-site physical hazards due to ready access to piles of metallic and non-metallic debris along both banks of the Unnamed Tributary. Concentrations of contaminants in the deep ground water beneath the Site were below health-based levels and, therefore, did not pose a threat. During the 1993 OU2 RI, infrared aerial photography indicated that thermal anomalies (surface soil temperatures of 75 to 80 degrees Fahrenheit on a cool morning) still existed in the northeast and northwest quadrants of the landfill.

4.0 Remedial Actions

In accordance with CERCLA and the NCP, the overriding goals for any remedial action are protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). A number of remedial alternatives were considered for the Site, and final selection was made based on an evaluation of each alternative against nine evaluation criteria that are specified in Section 300.430(e)(9)(iii) of the NCP. The nine criteria include:

1. Overall Protectiveness of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility or Volume of Contaminants through Treatment
5. Short-term Effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

4.1 Remedy Selection

OU1

The OU1 Record of Decision (ROD) was signed on September 29, 1989, and addressed the contaminated soils, sediments, surficial aquifer and drums of the unpermitted landfill. The remedial actions in the 1989 ROD were selected to:

- Reduce risks posed by direct contact with study area soils contaminated with PCBs and lead, study area sediments contaminated with PAHs and PCBs, and inhalation of organics and PCBs from surface water within the study area.
- Collect and treat leachate to eliminate or greatly reduce the accumulation of leachate that might still be generated as a result of leaking, buried drums within Area A. (The contaminant source area was determined to be a large area of buried drums on both sides of the ridge in the southern portion of the RI Study Area).
- Contain contaminants within Area B (a smaller, additional drum burial area just north of Area A), thereby eliminating or greatly reducing infiltration of rainfall into the surface water and surficial ground water, as well as the direct contact exposure pathways.
- Design and construct the cap to minimize the amount of leachate generation, promote drainage, minimize erosion of the cover, and provide long-term minimization of migration of liquids through the underlying drums and soil.

The remedy components included in the 1989 OU1 ROD are:

- Excavate approximately 26,200 cubic yards of contaminated soil, surface drums, buried drums and fill material from Area B.

- Excavate approximately 5,200 cubic yards of contaminated on-site sediments from the intermittent valley streams within the study area of the Site.
- Treat the contaminated sediments and material from Areas A and B using a thermal destruction unit.
- Solidification/fixation of approximately 50 percent of the treated material and return material and treated soils into Area A and B for placement.
- Consolidate and cap wastes within Area A in accordance with federal and state requirements (including incineration of a to-be-determined volume of material in Area A). Investigate Area A to define the volume and nature of contaminants within that area before capping.

Health-based remediation levels for soils in the ROD were: lead (500 ppm); total PAHs (5 ppm); and total PCBs (2 ppm).

During the course of the remedial design, data generated from additional sampling and analysis and from treatability studies indicated a need for an amendment to the original ROD. The amended ROD was issued by EPA on September 29, 1991. Its main components are:

- Excavate approximately 16,000 cubic yards of contaminated soils in Area B to the underlying rock or to a shallower depth at which contamination is below action levels.
- Consolidate and treat contaminated soils, sediments and debris from the west and southeast sides of Area A.
- Decontaminate utilizing best management practices and overpack unearthed drums, metal objects and similar debris excavated from Area B.
- Place overpacks in a shallow grave in Area A prior to capping.
- Treat on-site selected Area B soils by a chemical process to decontaminate or immobilize remaining contaminants of concern (COCs) that are above the action levels.
- Place all treated material from Area B in Area A under the cap.
- Build reinforced concrete retaining walls along most of the west side of Area A.
- Build double-reinforced concrete retaining walls along a section of the northeast side of Area A.
- Build other engineered retaining structures along the perimeter of Area A, where appropriate.
- Integrate a leachate collection system with the perimeter retaining structures and collect leachate in storage tank(s) of appropriate size.
- Treat and properly dispose of leachate on site or off site.
- Design surface run-on/run-off control systems for a 50-year/24-hour rain event.
- Cap Area A utilizing a Resource Conservation and Recovery Act (RCRA) cap, which may include a bentonite matting component and a synthetic geomembrane (high density polyethylene (HDPE) or equivalent) of at least 30 mm thickness.

OU2

The OU2 ROD was signed on September 17,1993, and addressed landfill wastes, leachate, leachate sediment, surface soil, ground water and surface water contamination in an approximately 40-acre permitted landfill and other outlying areas on site.

The purpose of the OU2 remedy was to reduce the risk associated with exposure to the contaminated on-site surface soils; contaminated on-site surface and ground waters; contaminated on-site stream sediments; and contaminated, on-site leachate and leachate sediments. The major components of the selected remedy included:

- Remediate subsurface thermal anomalies by excavation.
- Consolidate peripheral waste areas within the landfill.
- Install an extensive leachate collection system to intercept and collect leachate and contaminated ground water.
- Re-contour the surface of the landfill.
- Install a RCRA-type cap with run-on and run-off control systems and a gas control system.
- Install a multi-stage leachate treatment system for on-site discharge to the intermittent Unnamed Tributary east of the landfill.
- Install a perimeter fence and warning signs.
- Monitor the OU2 wells semi-annually for five years after construction is complete and thereafter annually for 25 years.
- Impose surface water and ground water use restrictions as well as deed restrictions to limit land use.

Health-based remediation levels for soils in the OU2 ROD were: bis (2-ethylhexyl) phthalate (0.9 ppm); heptachlor epoxide (0.006 ppm); 4,4'-DDE (1,1-dichloro-2,2-bis(p-chlorophenyl)ethylene) (0.023 ppm); 4,4'-DDD (1,1-dichloro-2,2-bis(p-chlorophenyl)ethane) (0.058 ppm); 4,4'-DDT (1,1,1-trichloro-2,2-bis(p-chlorophenyl)ethane) (0.047 ppm); alpha-chlordane (0.04 ppm); and gamma-chlordane (0.04 ppm). However, for the purposes of actual consolidation of soils, a subtotaling-of-concentrations scheme was devised to facilitate the consolidation of hundreds of thousands of cubic yards of soils associated with the OU2 area.

Table 2 lists health-based remediation levels for the treatment of leachate and surface water identified in the OU2 ROD.

Table 2: OU2 Leachate/Surface Water Remediation Levels

COC	Remediation Levels (micrograms per liter (µg/L))
2,4-Dimethylphenol	4,570
2-Chlorophenol	23

COC	Remediation Levels (micrograms per liter (µg/L))
Antimony	62
Arsenic	11
Barium	231
Chromium	11
Methylene chloride (Dichloromethane)	5,870
Nitrobenzene	250
N-Nitrosodi-n-propylamine	11
Phenol	365,000
Thallium	11

EPA signed an Explanation of Significant Differences (ESD) on November 3, 2009 that modified the existing institutional controls component of the remedy to allow residential development on the portion of the property that is outside of the secured OU1 and OU2 landfill cells. The approximately 80-acre "controlled" area that is fenced, plus an 80-foot buffer along the perimeter of the fence line, would not be developed. This 80-foot protective buffer exists along the entire perimeter of the existing fence line, except for a small section near the southern entrance to the Site. The buffer requirements were eased for this small section to allow room for a road to gain access to the southwestern corner of the Site (see Appendix F for a map of the modified area affected by the ESD). The surface water and ground water restrictions established by the March 1999 restrictive covenant remain in effect, and are not modified by the 2009 ESD. Although allowed by the 2009 ESD, the restrictive covenant has not yet been updated with the new boundaries at the Bullitt County Clerk of Courts.

4.2 Remedy Implementation

The remedial design for OU2 was started by Law Engineering, now MACTEC, in June 1994. The plans called for sediment removal, placement, and consolidation; construction of the landfill cover system, run-on and run-off controls, gas control system, perimeter fence and warning signs; and Gabion wall improvements to the Unnamed Tributary, leachate collection and ground water interceptor system, and leachate treatment plant. Construction was completed in September 1998.

OU1

EPA issued a CERCLA Section 106 Unilateral Administrative Order (UAO) to more than 30 PRPs on March 14, 1990, to perform the OU1 remedial design/remedial action activities. The remedial design began on May 4, 1990. The OU1 remedial action began in May 1993; construction activities were completed in January 1996.

Surface and subsurface soil and sediment hot spots contaminated with PCBs and PAHs were confirmed by additional sampling and analysis, excavated, screened and stockpiled.

Base-catalyzed thermal desorption process equipment was mobilized to a custom-built 3-acre concrete pad immediately southeast of the main OU1 area, and stockpiled contaminated soils were treated in the modified rotary kiln incinerator. Approximately 20,500 cubic yards of soils and sediments were treated. Treated soils and sediments with lead concentrations over the 500 ppm action level were not found, so no solidification of soils was necessary.

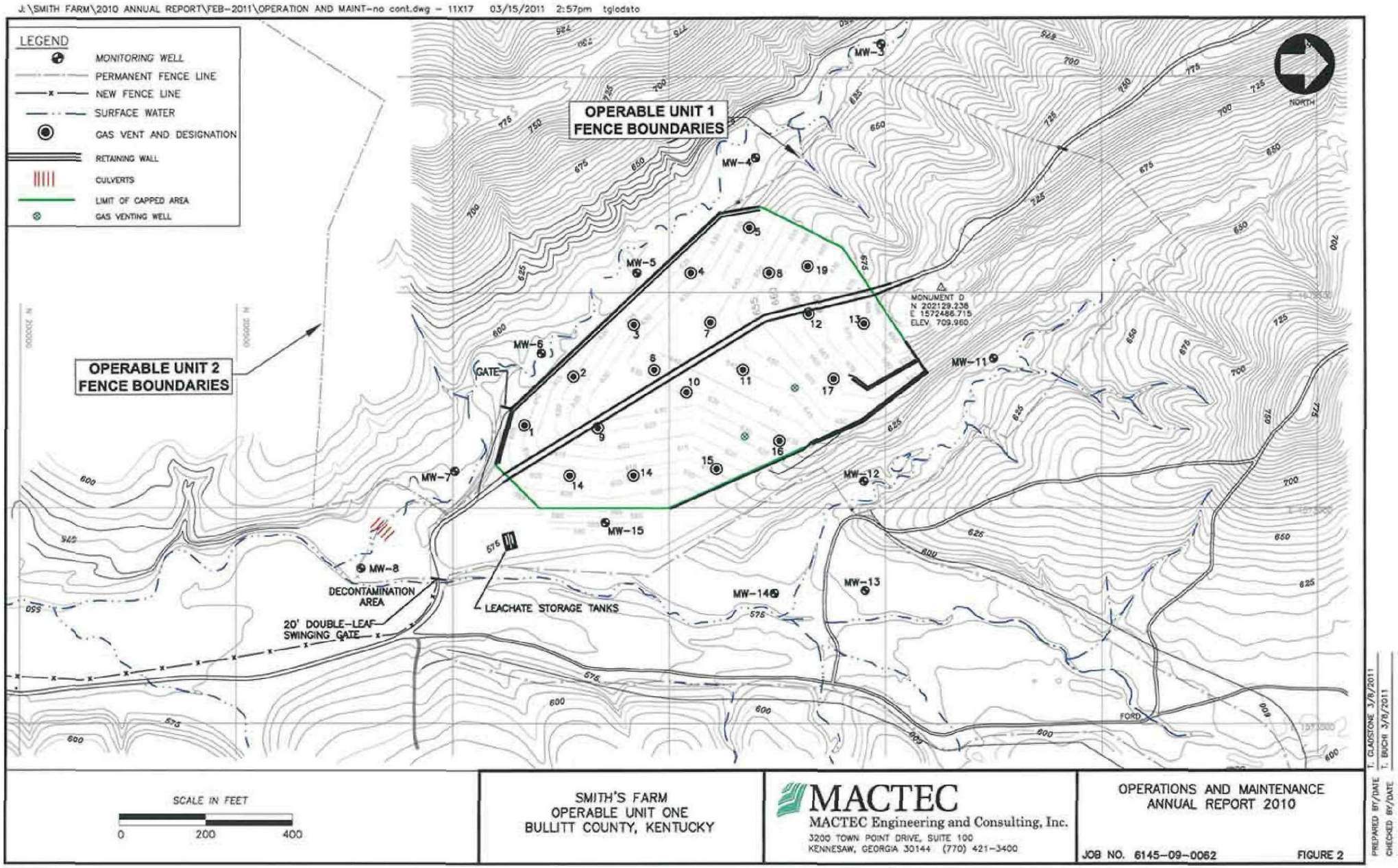
At the main OU1 area, an 11-acre landfill was constructed. On the west toe of the hill in the main OU1 area, a 1,000-foot long reinforced concrete retaining wall was built. On the northeast corner of the hill, another reinforced concrete retaining wall was built. Main leachate collection and conveyance lines were installed along the entire north-south edges of the east and west sides of the new landfill inside the retaining walls. The gravity-fed leachate collection lines were connected to two double-wall fiberglass reinforced plastic underground storage tanks.

After backfilling the new landfill with treated soils and contouring with compacted clean fill, the 11-acre landfill was capped with geocomposite bentonite matting, a HDPE liner, and a geotextile drainage/filter net. A layer of top soil was applied and hydroseeded. Run-on and run-off ditches and swales were constructed. Gabions were installed at critical stretches along the Unnamed Tributary and its tributaries to guard against stream bank collapse and to manage erosion.

Leachate is collected at OU1 in two 10,000-gallon double-walled fiberglass underground storage tanks located at the southeast corner of the cap. The north tank contains leachate collected from the east side of the landfill and the south tank contains leachate collected from the west side of the landfill. The level of leachate in each tank is monitored by a float system. When the tank reaches 50 percent of its capacity, an amber indicator light on the control panel illuminates. When this tank reaches 85 percent of its capacity, an electronically actuated valve shuts off flow into the tank from the collection system. A force main was installed in 2000 to automatically transfer leachate from OU1 to OU2's lift station for subsequent treatment at the OU2 treatment plant.

The entire OU1 capped area was fenced and signed. A restrictive covenant restricting land, ground water and surface water use was filed in March 1999 with Bullitt County. Details of OU1 can be found in Figure 3.

Figure 3: OU1 Detailed Map



OU2

In April 1994, after unsuccessful negotiations, a UAO for the OU2 remedial design/remedial action was issued to 10 PRPs. The remedial design began in June 1994. The remedial action construction began in March 1996, and was complete in September 1998. The remedial action resulted in the consolidation and capping of the approximately 40-acre, formerly permitted landfill, and the construction of a leachate treatment plant with a National Pollutant Discharge Elimination System (NPDES)-type discharge to an on-site intermittent stream. Operation and maintenance (O&M) activities began during the late summer of 1998.

The landfill's thermal anomalies were investigated and better delineated, but were not excavated, sprayed with water or fire retardant chemical foam, or subjected to application of other nonhazardous extinguishing substances because it was not necessary. Subsurface probes indicated that the thermal intensity at depth had decreased to the point that no response actions were necessary.

The consolidation and recontouring of the landfill was designed and constructed to enhance the run-on and run-off of rainfall so that there would be no collection or ponding of surface water on the cap and so that efficient management of drainage was maintained. Small piles of metallic waste and old tires along the banks of the Unnamed Tributary were disposed of in the landfill during consolidation. Fill soils were collected from uncontaminated Smith's Farm property soils on the surrounding hillsides. Borrow areas were recontoured and seeded.

The cap and cover system was designed and built to satisfy RCRA-type cap and cover requirements. A geocomposite bentonite matting was placed on the contoured and compacted earthen underlayment. A low density polyethylene (LDPE) plastic liner was installed over the bentonite geocomposite. Geotextile drainage netting was placed over the LDPE liner. Two feet of top soil was placed on top of the drainage geotextile and the top soil was seeded.

Because the former landfill comprises more than 35 acres of sloped terrain, it was important for the long-term reliability of the cap that rain water be systematically diverted onto and off of the cap without damaging the cap and cover system. Sod- and riprap-lined drainage ditches and swales were designed and built.

A subsurface leachate collection system extends down the east and southeast edges of the landfill. Collected leachate is subjected to physical, chemical, and biological treatment, and on-site discharge to the Unnamed Tributary. The discharge meets the substantive requirements of a Kentucky Pollutant Discharge Elimination System (KPDES) discharge. KDEP has been consulted and kept informed on NPDES issues. The leachate treatment plant began full operation on August 14, 1998. Perimeter fencing, lockable gates, warning signs and other security measures were installed.

The ground water monitoring system entails sampling and full-scan analysis of OU2 ground water monitoring wells and certain surface waters semi-annually for the first five years after landfill closure, and then annually for the next 25 years. The frequency and character of sampling and analysis of the leachate treatment plant effluent was determined during the remedial action construction phase. The leachate plant effluent was monitored monthly for the first six months of operation, bimonthly for months seven through 18, and quarterly after the first 18 months. Reporting was scheduled for quarterly for the first 18 months, semi-annually until year five (after the first 18 months), and annually after year five.

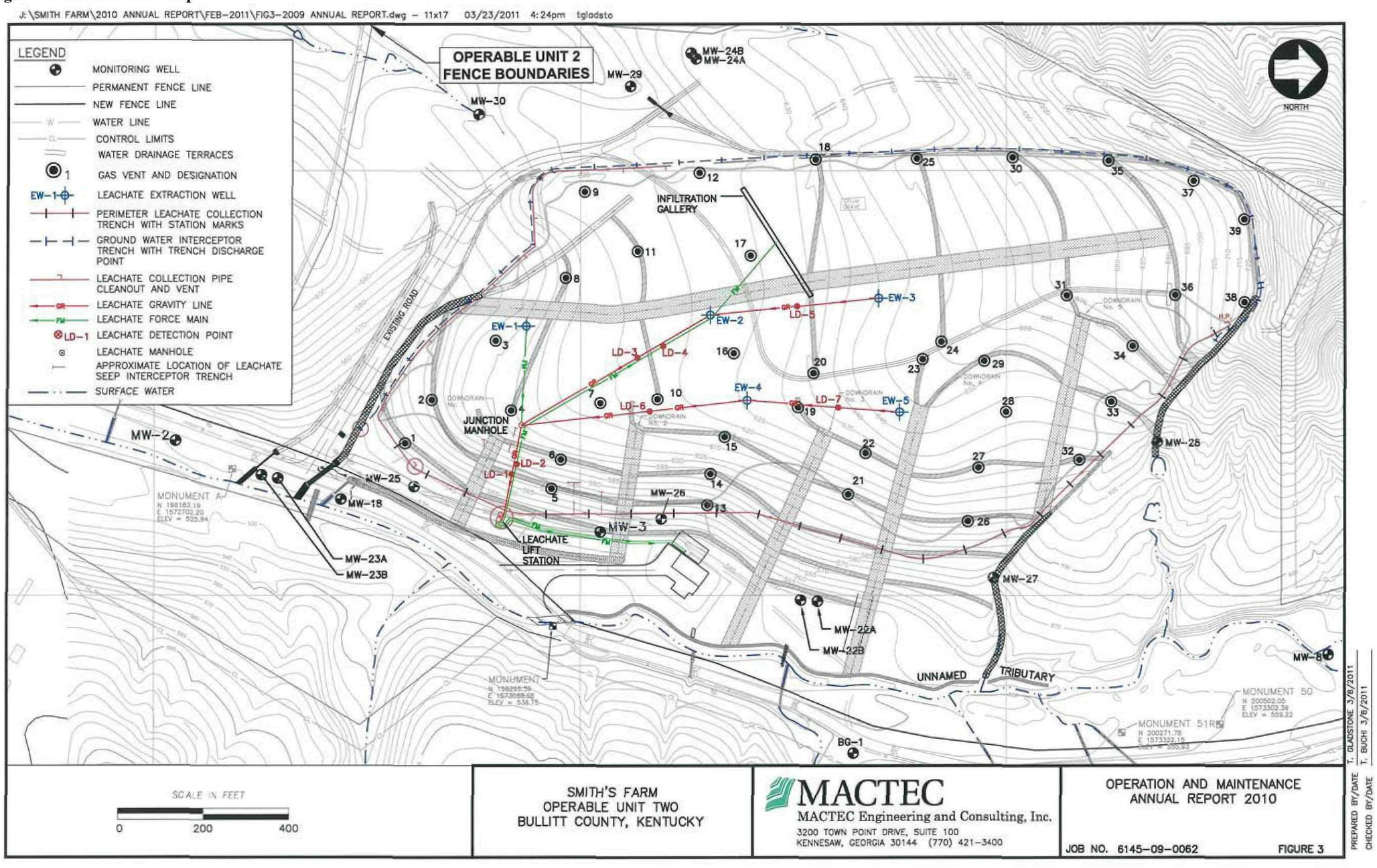
As a result of severe rain storms in 1999, a number of erosion repairs were necessary on the OU1 and OU2 caps. The more urgent of the repairs were completed in June of that year. Repairs included replacing soil and reseeding in numerous areas on both caps; replacing soil and gravel within the roadway to the OU2 cap; removing soil, gravel and riprap from the roadway ditches and cleaning out the culverts. Primary modifications to the landfill cover system relate to the surface water drainage system.

In 2000, the construction of drainage improvements on the landfill cap and adjacent areas of OU2 was completed. The work included:

- Installation of textured HDPE geomembrane for lining of downdrains to toe of landfill slope.
- Construction of a concrete-filled cellular confinement system for lining of the lower section of downdrains 3 and 4.
- Improvements to designated portions of the upper section of the main drainage way (MDW), including removal of existing riprap and debris, placement of fill in erosion gullies, re-grading of the MDW, and installation of turf reinforcement.
- Placement of select soil fill and installation of turf reinforcement matting to repair erosion gullies on the surface of the landfill cap and terraces, including terrace entrances to downdrains and ditches.
- Re-grading of MDW at the access road crossing and construction of a concrete-filled cellular confinement system.
- Repair of the landfill cap access road from paved road to top of southwest slope, including placement of specified dense graded aggregate mix for filling of erosion gullies and resurfacing of the road, re-grading of the road surface (including crowning of road), placement of select soil fill and re-grading of areas adjacent to the road, and application of asphalt prime and seal coats.
- Reconstruction of the southeastern runoff ditch.
- Reconstruction of drainage ditches in the upper northeast section of the landfill cap.
- Reconstruction of the lower northeast perimeter drainage ditch.
- Reconstruction of a defined section of the existing Gabion wall on the west bank of the creek and placement of concrete grout in eroded areas beneath the Gabion wall.

Details of OU2 can be found in Figure 4.

Figure 4: OU2 Detailed Map



While the remediation at OU1 and OU2 was ongoing under the two aforementioned UAOs, attorneys from the U.S. Department of Justice in Washington, D.C., and from EPA's Region 4 office worked with representatives from the major PRPs to settle lawsuits that involved the payment of past, present and future response costs. These negotiations resulted in a Consent Decree for cost-share allocation in October 1997 and an Administrative Order on Consent (AOC) for 24 de minimis parties in January 1998. According to the Consent Decree, the maintenance for both OUs will be managed by the Ford Motor Company using money paid into a special fund by the PRPs. Land use restrictions were recorded with Bullitt County and are overseen by the State and EPA. The restrictive covenant filed in March 1999 imposes water use restrictions for ground water and surface water in the immediate area of the landfill. These waters are not to be used for potable water sources as a precaution against future releases of contaminants. The restrictive covenant states that the property may not be utilized for residential or commercial development, exploration, investigation or any activity that will result in disturbance of the land surface without written consent from EPA.

On May 28, 2008, drums were observed at a location outside of the capped landfill area at OU1. It was initially thought to be six to 13 drums, but when the drum characterization and removal was completed in September 2009, a total of 319 drums, scraps and carcasses were removed. Drums were excavated and transported under manifest to an approved waste disposal facility. Due to the condition of the bridge exiting the Site and its inability to accommodate heavy trucks, the non-hazardous soils associated with the buried drums were not removed. The bridge was upgraded in April 2010.

4.3 Operation and Maintenance (O&M)

The O&M period for the Site effectively began with the completion of the remedial actions that were completed in September 1998. On January 17, 1996, the final OU1 O&M Plan was submitted to EPA. On March 15, 1999 the final OU2 O&M Plan was submitted to EPA Region 4. Each plan outlined the ongoing O&M requirements for the 30-year post-closure period. The O&M activities for the Site include quarterly and annual site inspections, leachate management and treatment, storm event inspections, routine maintenance and repairs, and semi-annual and annual sampling and analysis of ground water. Routine O&M of the Site is being conducted in accordance with the O&M Plan.

OU1 and OU2 cap system maintenance has generally been limited to routine mowing, periodic weed control and woody vegetation removal, fence repair, rodent control and occasional repair of stressed or eroded areas. The 2010 O&M report indicated that the access road has minimal areas of cracking, but the fence was relocated by the current property owner and the majority of the access road is now outside the fenced area controlled by the O&M contractors.

The 2010 O&M report noted the presence of an oily substance in the lift station on three occasions in 2010 after a heavy (4 inches or more) rainfall event at the Site. The three times that oil was observed were January 21, May 3, and December 6, 2010.

The treatment plant stopped functioning on January 21, 2010 due to a power outage, and an oily substance was observed in the lift station at that time. Samples were collected from the lift station and Extraction Wells #1, #2, and #4 to help determine a source. The samples were sent to Lancaster Laboratories and analyzed for oil and grease, total organic carbon, VOCs, SVOCs, PCBs, and metals. Review of the results indicates that the lift station sample contains lower constituent concentrations than the extraction well samples, with the exception of phthalates, naphthalene/2-methylnaphthalene, and oil and grease.

The concentrations of phthalates and oil and grease in the lift station sample were orders of magnitude greater than those concentrations in the extraction well samples. In addition, the samples collected from the lift station and extraction wells did not look or smell alike; therefore, it was concluded that the oily substance does not appear to have come from the extraction wells. The specific source is unknown. However, it was determined that the oil-like substance did not come from the extraction well pumps and the treatment plant equipment.

During subsequent occasions, cleanup of the oil from the surface of the lift station sump with sorbent socks was initiated and continued until no visible oil was seen. MACTEC has plans to put equipment in place to remediate future influxes of the oily substance. Determination of the source is ongoing.

Due to trespassing and vandalism issues, a security camera system was installed by MACTEC in 2006; it records activities at the Site 24 hours a day, contains motion sensors, and includes automatic call features in case of an alarm trip. The security system is inspected as needed to verify that it is working properly.

The PRPs have contracted with MACTEC to perform overall project management and perform environmental operations and maintenance management activities for the entire site. MACTEC has been the sole O&M contractor for this site to date. The 1994 FS projected O&M costs through 2029 were estimated at $425,000 per year.

Table 3: Annual O&M Costs

Year	Total Cost (rounded to the nearest $1,000)
2006	$359,000
2007	$360,000
2008	$300,000
2009	$484,000
2010	$441,000

5.0 Progress Since the Last Five-Year Review

The protectiveness statement from the 2006 FYR for the Site stated the following:

Based on this Five-Year Review and the above summary, the following conclusion is drawn:

"The remedy at the Site currently protects human health and the environment because the landfill cap is intact, the leachate treatment system is effective and all residents in the vicinity obtain water from the city, thus eliminating the exposure pathways relative to surface soils, surface water and leachate water. However, in order for the remedy to be protective in the long-term, groundwater monitoring data must be reported and evaluated to ensure that the remedy prevents migration of hazardous substances offsite within groundwater."

The 2006 FYR included seven issues and recommendations. Each recommendation and its current status is discussed below.

Table 4: Progress on Recommendations from the 2006 FYR

Section	Recommendations	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
5.1	Repair eroded areas of cap.	PRP	Quarterly Reports	Cover areas that experienced erosion are repaired as needed.	03/28/2008
5.2	Repair areas of stressed vegetation.	PRP	Quarterly Reports	Areas of missing or distressed vegetative cover are repaired when discovered.	03/28/2008
5.3	Plot contaminant concentrations on site map as part of the annual report in order to monitor concentrations within the landfill and determine if the leachate capture system is successfully preventing migration off site.	PRP	2006 Annual Report	Annual reports include sampling results on site maps.	03/28/2008
5.4	Conduct evaluation to determine whether gaseous emissions should be monitored to ensure the effectiveness of the existing vent system.	PRP	2007 Annual Report	Methane, carbon dioxide and oxygen emissions from each landfill gas vent in OU1 and OU2 were analyzed.	01/14/2008
5.5	Consider implementing more progressive trespassing and vandalism control measures.	PRP	On-going	A security camera system was installed.	2006

Section	Recommendations	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
5.6	An evaluation of detection limits and reporting limits as compared to permit limits should be included in the parameters reported.	PRP	2006 Annual Report	Annual reports include detection limits, reporting limits, and maximum contaminant levels (MCLs) in parameters reported.	03/28/2008
5.7	Annual reports should plot the influent and effluent concentrations versus time to show annual variability and overall site progress.	PRP	2006 Annual Report	Annual reports include graphs of influent concentrations versus time.	03/28/2008

5.1 Eroded Areas of Cap

Cover areas that experienced erosion are repaired as needed.

5.2 Stressed Vegetation

Areas of missing or distressed vegetative cover are repaired when discovered.

5.3 Plot Contaminant Concentrations on Site Map

Annual reports include contaminant concentration sampling results and ground water flow on site maps.

5.4 Gaseous Emissions

MACTEC developed the Gas Monitoring Field Operations Manual (dated November 16, 2007) and used a GEM 2000 Gas Analyzer to measure methane, carbon dioxide and oxygen emissions from each landfill gas vent in OU1 and OU2. The analyzer was also used to measure the concentration of these three gas emissions from the two deep well vents in OU1 and select side-gradient and down-gradient monitoring wells, or both. The emissions were monitored once.

5.5 Trespassing and Vandalism Control Measures

Due to trespassing and vandalism issues, a security camera system was installed by MACTEC in 2006; it records activities at the Site 24 hours a day, contains motion sensors, and includes automatic call features in case of an alarm trip. The security system is inspected as needed to verify that the system is working properly.

5.6 Include a Comparison of Detection Limits and Reporting Limits to Permit Limits

Annual reports include detection limits, reporting limits and MCLs in parameters reported.

5.7 Plot Influent and Effluent Concentrations Versus Time

Annual reports include graphs of influent concentrations versus time. Effluent concentrations are not graphed versus time, but according to the 2010 O&M Report, of the 173 constituents analyzed, since 1999 there have been only five exceedances of the ROD and KPDES effluent requirements (see Section 6.5).

6.0 Five-Year Review Process

6.1 Administrative Components

EPA Region 4 initiated the FYR in January 2011 and scheduled its completion for September 2011. The EPA site review team was led by EPA Remedial Project Manager (RPM) Cathy Amoroso and also included EPA Community Involvement Coordinator (CIC) Tonya Whitsett and contractor support provided to EPA by Skeo Solutions. In January 2011, EPA held a scoping call with the review team to discuss the Site and items of interest as they related to the protectiveness of the remedy currently in place. A review schedule was established that consisted of the following activities:

- Community notification.
- Document review.
- Data collection and review.
- Site inspection.
- Local interviews.
- FYR Report development and review.

6.2 Community Involvement

In March 2011, a public notice was published in the *Pioneer News* newspaper announcing the commencement of the FYR process for the Site, providing contact information for Cathy Amoroso, RPM, and Tonya Whitsett, CIC, and inviting community participation. The press notice is available in Appendix B. No one contacted EPA as a result of this advertisement.

The FYR Report will be made available to the public once it has been finalized. Copies of this document will be placed in the designated site repository: Ridgeway Memorial Library, located at 2nd and Walnut Street, Shepherdsville, Kentucky. Upon completion of the FYR, a public notice will be placed in the *Pioneer News* newspaper to announce the availability of the final FYR Report in the Site's document repository.

6.3 Document Review

This FYR included a review of relevant, site-related documents including the ROD, remedial action reports, and recent monitoring data. A complete list of the documents reviewed can be found in Appendix A.

ARARs Review

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain "a degree of cleanup of hazardous substance, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment." " The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and

appropriate. Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility citing laws that specifically address a hazardous substance, remedial action, location, or other circumstance found at a CERCLA site. Relevant and appropriate requirements are those standards that, while not "applicable," address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are more stringent than federal requirements may be applicable or relevant and appropriate. To-be-considered (TBC) criteria are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary remedial action. For example, TBC criteria may be particularly useful in determining health-based levels where no ARARs exist or in developing the appropriate method for conducting a remedial action.

Chemical-specific ARARs are health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish an acceptable amount or concentration of a chemical that may remain in, or be discharged to, the ambient environment. Examples of chemical-specific ARARs include MCLs under the Federal Safe Drinking Water Act (SDWA) and ambient water quality criteria enumerated under the Federal Clean Water Act.

Action-specific ARARs are technology- or activity-based requirements or limits on actions taken with respect to a particular hazardous substance. These requirements are triggered by a particular remedial activity, such as discharge of contaminated ground water or in-situ remediation.

Location-specific ARARs are restrictions on hazardous substances or the conduct of the response activities solely based on their location in a special geographic area. Examples include restrictions on activities in wetlands, sensitive habitats and historic places.

Remedial actions are required to comply with the chemical-specific ARARs identified in the ROD. In performing the FYR for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed.

Ground Water ARARs

The ROD did not identify chemical-specific ARARs for ground water at the Site and no actual ground water protection standards were called out specifically as remediation goals. SDWA MCLs were not identified as ARARs at this site, but rather are TBC criteria. The ROD stated the MCLs were not ARARs because the small ground water systems near the landfill being used as sources of drinking water had not received, and were not expected to receive, contamination from the Site. The ground water near the site is classified as Class III by EPA's Ground Water Classification System and water-bearing zones containing Class III ground water typically are not considered potential drinking water sources. Ground water monitoring is required at the Site and, according to the ROD, must comply with Sections 10 and 11 of 401 KAR 34:060, which states that

"[s]hould the ground water monitoring at the Site indicate that the MCLs/MCLGs [maximum contaminant levels/maximum contaminant level goals] are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs and MCLGs."

Surface Water ARARs

The ROD identified KPDES 401 KAR 5:005 as an ARAR for surface water. A letter from the State on July 10, 1997 indicated that KPDES permit requirements were waived, contingent on site effluent meeting the criteria in the letter's attachment. In addition to the risk-based standards for 11 constituents identified in the ROD, the 1997 letter specified effluent standards for an additional 26 contaminants that must be met at the Site (Table 5). The ROD also identified the Kentucky's Surface Water Quality Standards as a surface water ARAR, but it did not provide specific standards for COCs.

Table 5: Surface Water Discharge Requirements

COC	1993 Effluent Standards	1997 Effluent Standards
1,1,2-Trichloroethane	--	5 µg/L
1,1-Dichloroethane	--	5 µg/L
1,1-Dichloroethene	--	5 µg/L
1,2-Dichlorobenzene	--	5 µg/L
1,2-Dichloroethane	--	5 µg/L
1,2-Dichloropropane	--	5 µg/L
1,4-Dichlorobenzene	--	5 µg/L
2,4-Dimethylphenol	4,570 µg/L	5 µg/L
2-Chlorophenol	23 µg/L	--
Antimony	0.062 mg/L	1.6 mg/L
Arsenic	0.011 mg/L	0.05 mg/L
Barium	0.231 mg/L	--
Benzene	--	5
Beryllium	--	0.0053 mg/L
Butyl benzyl phthalate	--	5 µg/L
Cadmium	--	0.0011 mg/L
Chromium	0.011 mg/L	0.011 mg/L
Copper	--	0.012 mg/L
Cyanide	--	0.005 mg/L
Ethylbenzene	--	5 µg/L
Iron	--	1 mg/L
Lead	--	0.0032 mg/L
Mercury	--	12 ng/L
Methylene chloride (Dichloromethane)	5,870 µg/L	5 µg/L

COC	1993 Effluent Standards	1997 Effluent Standards
Nickel	--	0.16 mg/L
Nitrobenzene	250 µg/L	--
N-Nitrosodi-n-propylamine	11 µg/L	--
Phenol	365,000 µg/L	5 µg/L
Selenium	--	0.005 mg/L
Silver	--	0.00012 mg/L
Tetrachloroethene	--	5 µg/L
Thallium	0.011 mg/L	0.04 mg/L
Toluene	--	5 µg/L
Trichloroethene (TCE)	--	5 µg/L
Zinc	--	0.11 mg/L
mg/L=milligrams per liter µg/L= micrograms per liter ng/L=nanograms per liter		

Soil ARARs

The ROD did not specify chemical-specific ARARs for soil. Cleanup goals for soil COCs were based on a site-specific risk assessment.

6.4 Data Review

Ground Water

As part of the Annual Inspections, sampling and analysis of monitoring wells for OU1 and OU2 was performed in November 2006, November 2007, November 2008, May 2009 and May 2010. Sampling included monitoring wells MW-3 through MW-8 and MW-11 through MW-15 of OU1; BG-1 of OU1 and OU2; and OU2 monitoring wells MW-18, MW-19, MW-22A, MW-22B, MW-24A, MW-24B, and MW-25 through MW-30. Samples were analyzed for VOCs, SVOCs and metals. The 2010 Annual Reports included trend graphs for the monitoring well data reported from 2000 to 2010 using the following rationale:

- VOCs were graphed for the wells in which VOCs have been historically detected: MW-11, MW-12, MW-15 and MW-30.
- SVOCs were graphed (if detected) for MW-11, MW-15 and MW-30. In addition, SVOCs present in MW-4 and MW-25 were graphed due to the historical exceedances of the MCLs.
- Metals that exceeded the MCL were graphed specific to the location in which the exceedence occurred.

All trend graphs are included in Appendix G. The 2010 Annual Report noted that a plume map could not be constructed due to the lack of data surrounding the wells where significant detections of VOCs were observed.

VOCs

VOCs have been historically detected in two OU1 monitoring wells (MW-11 and MW-15) and one OU2 monitoring well (MW-30). MW-11 and MW-15 are located on the eastern side of OU1 (Figure 5). Since 2001, concentrations of total 1,2-dichloroethene (1,2-DCE) and TCE in MW-11 have been above their corresponding MCLs. No other VOCs were detected above the MCL in MW-11 during the past five years. Concentrations of 1,2-DCE and TCE in MW-11 increased from January 2001 (approximately 600 and 1,000 µg/L, respectively) to November 2006 (1,300 and 1,900 µg/L, respectively). Concentrations then declined sharply from November 2006 to May 2009, but have increased since May 2009 to current, 2010 levels (700 and 540 µg/L, respectively). Current levels remain above the corresponding MCLs. There are insufficient downgradient monitoring wells to indicate if and where a plume has migrated near MW-11. The vertical and horizontal extent of contamination in MW-11 has not been defined. The source of contamination found in MW-11 has not been identified.

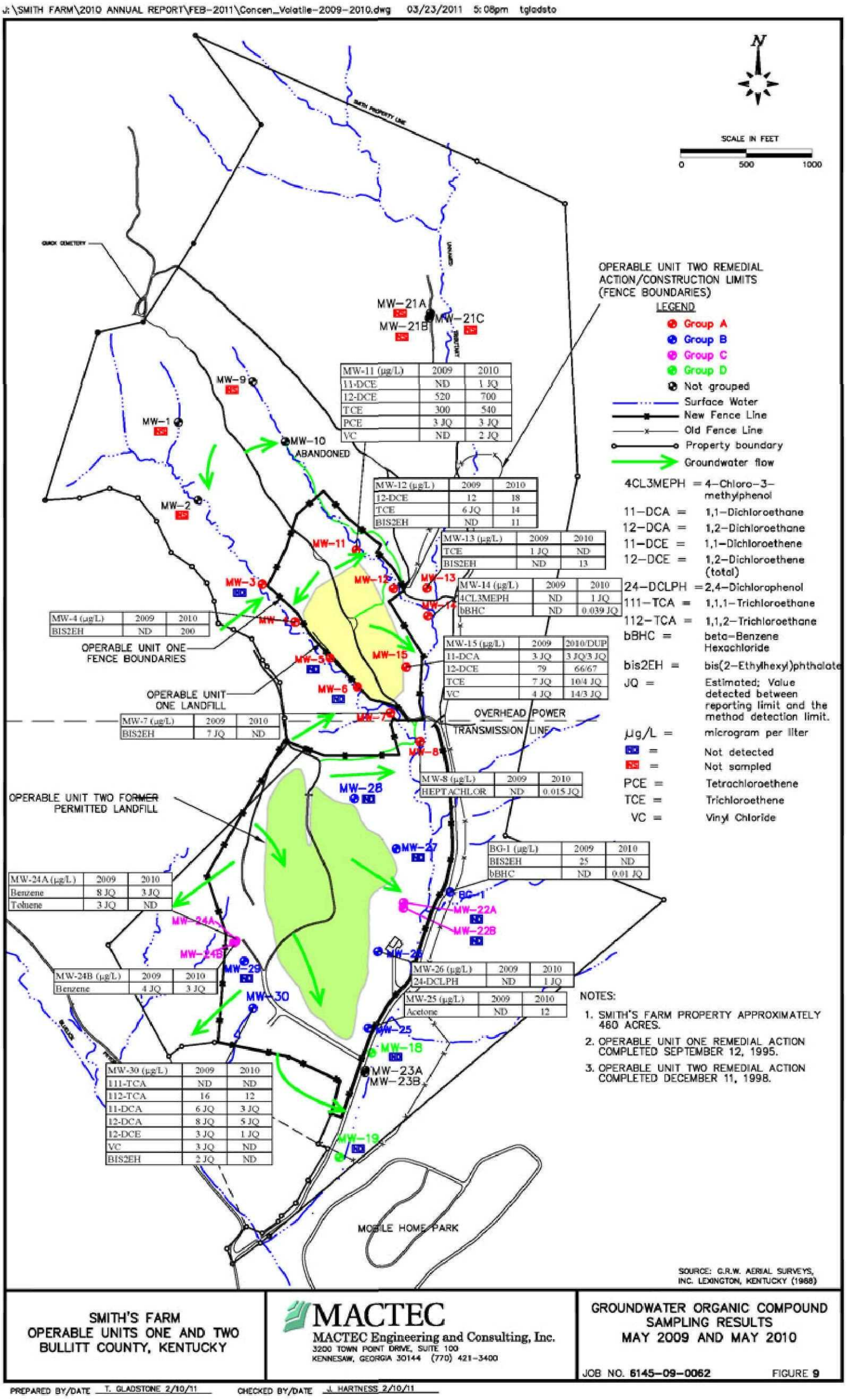
Since 2004, concentrations of vinyl chloride in MW-15 have been above the MCL. The 2010 concentrations are the highest ever detected in MW-15. Historically, vinyl chloride had been below the MCL, but concentrations have increased, most notably from 2009 to 2010. Concentrations of 1,2-DCE in MW-15 have also increased from the lowest detection in 2003 to the highest in fall 2008. Concentrations since fall 2004 have fluctuated above and below the MCL of 70 µg/L, most recently with a small decline from 79 µg/L in November 2009 to 67 µg/L in May 2010. No other VOCs were detected above the MCL in MW-15 during the past five years. There are insufficient downgradient monitoring wells to indicate if and where a plume has migrated near MW-15.

In December 2008, low levels (below the Contract Required Detection Limit (CRDL)) of VOCs (1,2-DCE and TCE) were reported in samples collected from MW-12 and MW-14, also located on the eastern side of OU1, and in monitoring well MW-3, located on the western side of OU1. VOCs were not detected in MW-3 or MW-14 in the May 2009 or 2010 sampling events. However, 1,2-DCE and TCE were again detected in MW-12 in 2009 and 2010. Concentrations of 1,2-DCE and TCE in MW-12 have increased in each sampling event since November 2007, from non-detect in 2007 to 18 and 14 µg/L, respectively, in May 2010. The 1,2-DCE concentrations are still well below the MCL, but the TCE concentrations exceed the MCL of 5 µg/L. VOCs had not been detected in MW-12 prior to 2008.

At OU2, VOCs have been detected at low levels (below 10 µg/L) in samples from downgradient well MW-30 and have sporadically increased from 2001 through 2005. In 2005, 2007, 2008, 2009 and 2010, 1,1,2-TCA exceeded its corresponding MCL of 5 µg/L. Three VOCs were detected in MW-30 in 2007, but six VOCs were detected in this well in 2008 and 2009; concentrations increased during this time. The following VOCs

were detected again in the May 2010 event, but at lower concentrations than 2009: 1,1,2-TCA at 12 µg/L, 1,1-dichloroethane estimated at 3 µg/L, 1,2-dichloroethane estimated at 5 µg/L, 1,2-DCE estimated at 1 µg/L, and acetone and benzene were undetected at the reporting limits.

Figure 5: May 2009 and May 2010 Ground Water Organic Compound Sampling Results



SVOCs

Bis(2-ethylhexyl)phthalate is the SVOC that is most commonly detected at elevated levels at the Site. It was detected above the MCL (6 µg/L) in five samples in the past five years: MW-7 (7 JQ[1] µg/L) and BG-1 (25 µg/L) in 2009 and MW-4 (200 µg/L), MW-12 (11 µg/L), and MW-13 (13 µg/L) in the 2010 sampling event. Bis(2-ethylhexyl)phthalate was also detected in MW-7, MW-30 and BG-1 in 2009, but was not detected in these wells in 2010. The concentration of bis(2-ethylhexyl)phthalate in MW-4 in 2010 was significantly greater than the MCL of 6 µg/L. There had been no detections of this COC in MW-4 prior to this date. Analysis of future sampling in MW-4 is needed to determine if this result is an anomaly.

Three SVOCs, bis(2-ethylhexyl)phthalate, 4-chloro-3-methylphenol and 2,4-dichlorophenol, were detected in 2010. No MCLs exist for 4-chloro-3-methylphenol or 2,4-dichlorophenol. Concentrations of diethyl phthalate and naphthalene in OU2 monitoring well MW-25 have declined since elevated detections in 2004 and have been non-detect in the past three sampling events.

Pesticides and PCBs

In the 2010 sampling event, two pesticides were detected in three wells at concentrations below the CRDL but above the method detection limit. Heptachlor was present in MW-8 (0.015 JQ µg/L) and beta-benzenehexachloride was present in MW-14 (0.039 JQ µg/L) and BG-1 (0.01 JQ µg/L). Pesticides have been sporadically detected throughout the years at low concentrations (below the CRDL) with no noticeable trends. PCBs were not detected in any of the samples collected in the May 2010 sampling event.

Metals

Metal concentrations have been sporadic with notable increases and decreases in concentrations from 2000 through 2006. In December 2007, low-flow sampling techniques were employed to aid in the reduction of suspended particulates and the production of more representative metal data. There were slight increases in metal concentrations in several wells during the last sampling event, but with the exception of those discussed below, the concentrations remained below MCLs.

Since 2000, six metals have been detected above MCLs in ground water samples. The six metals that exceeded a MCL on at least one occasion are: antimony, arsenic, cadmium, chromium, lead and thallium. In May 2010, the concentrations of total arsenic, cadmium, chromium and thallium were greater than their respective MCLs in MW-3, MW-6, MW-8, MW-15, MW-26 and MW-28.

[1] Estimated; value detected between the reporting limit and the method detection limit.

Chromium concentrations in MW-3 were below the 100 µg/L MCL since 2000, but spiked to 2,160 µg/L during the May 2009 sampling event. During the May 2010 sampling event, chromium concentrations were detected above the MCL at 141 µg/L.

Concentrations of several metals have declined in MW-6 and MW-8 since high levels were detected during 2004 and 2005, but several metals were still near or above the MCLs in these wells during the past five years. During the most recent sampling event, only thallium was above the 2 µg/L MCL in MW-6 (estimated at 4.1 µg/L). Arsenic (MCL of 10 µg/L) and thallium concentrations in MW-8 increased to levels above the MCL, 13.9 µg/L and estimated 4.1 µg/L respectively, during the 2010 sampling event. Thallium concentrations also increased to levels above the MCL in MW-15 (estimated at 2.6 µg/L) and MW-26 (estimated at 5.3 µg/L).

Cadmium concentrations in OU2 monitoring well MW-28 have fluctuated since 2000, including detections above the MCL in three of the past five sampling events. There is an overall downward trend for cadmium in this well and it was detected at 5.5 µg/L in May 2010. No other metals were detected above the MCL of 5 µg/L during the past 10 years.

Effluent Data

Quarterly sampling of the leachate treatment plant effluent was performed to meet the substantive requirements for discharge under the KPDES program. Although a permit for discharge is not required for a Superfund site, the substantive requirements under the KPDES program must be met.

According to the 2010 O&M Report, of the 173 constituents analyzed, since 1999 there have been only five exceedances of the ROD and KPDES effluent requirements. Ethylbenzene was detected at 14 µg/L (over the ROD/KPDES requirement of 5 µg/L) in September 2005 and selenium was detected at 0.01, 0.17, 0.0061 mg/L (over the ROD/KPDES requirement of 0.005 mg/L) in June and September 2005, and June 2008. Ethylbenzene has not been detected since the 2005 occurrence and selenium was not detected in any subsequent events. In the 2010 fourth quarter sample, mercury was detected at 13.1 ng/L, above the KPDES requirement of 12 ng/L. The sample was recollected in January 2011 and the mercury concentration (8.54 ng/L) was below the KPDES requirement. A summary of recent treatment plant effluent sampling results is presented in Appendix H.

6.5 Site Inspection

The site inspection was performed on March 16, 2011 by the following participants: Cathy Amoroso and Tonya Whitsett of EPA Region 4, Susan Mallette and Brent Cary of KDEP, Jeff Engels and Eddie Taylor of MACTEC, Darryl Shaw of S&S Land Development Group, Chris Fields of Linebach Funkhouser and Johnny Zimmerman-Ward and Rhode Bicknell of Skeo Solutions. During the site inspection, the following features were inspected or observed: the OU1 and OU2 landfill caps and surface drainage system, the leachate collection and transportation system, the leachate treatment plant, the

treated leachate discharge system and general site conditions. In general, the leachate collection, transportation, treatment and discharge systems were found to be operating and functioning properly. The completed site inspection checklist can be found in Appendix D and site photographs are available in Appendix E.

The property owner took site inspection participants to view the retention ponds that were required to be installed as part of the logging operations. The retention ponds were found to be in good working order, although some erosion was observed where logging roads were installed near the ponds.

MACTEC representatives led the group on a tour of the OU1 and OU2 landfills and the leachate treatment system. Minor areas with a slight loss of vegetation were observed on the OU2 cap and standing water was noted on a small area of the top of the cap. OU2 letdown channels were also observed to have one rodent hole, which MACTEC reports is an ongoing problem that is addressed when found. While observing the area of the recent drum removal, additional exposed drums were noticed along the access road north of OU1, outside of the fenced control area. MACTEC indicated that there are access issues with the property owner and MACTEC is only permitted on the OU1 and OU2 fenced areas.

As part of the site inspection, Skeo Solutions staff visited the designated site repository, Ridgeway Memorial Library, located at 2nd and Walnut Streets, Shepherdsville, Kentucky. Decision documents and previous FYRs were found at the repository.

Skeo Solutions staff conducted research at the Bullitt County Clerk's Office and found the following deeds and restrictive covenant information pertaining to the Site (Table 6).

Table 6: Deed Documents from Bullitt County Public Records Office

Date	Type of Document	Parcel Number*	Description	Book #	Page #
3/15/1999	Restrictive Covenant	03500000029	Restrictive covenant restricting land use, ground water and surface water use	0476	272
11/5/2007	Quit Claim Deed	03500000029	S&S Property and Land Development LLC name change to S&S Land Development Group	0709	0239
12/27/2006	Mortgage Modification	03500000029	Mortgage Modification	0711	0309
12/27/2006	General Warranty Deed	03500000029	Property transferred to S&S Property Land Development	0683	0654
12/27/2006	Mortgage	03500000029	Mortgage between Martha R. Smith and S&S Property Land Development	1131	0623

*Parcel number 03500000029 represents the property boundary identified in Figure 2.

A restrictive covenant limiting land use was filed with Bullitt County on March 15, 1999. Table 7 lists the components of the restrictive covenant that act as institutional controls at the Site. This restrictive covenant should run with the land and all future sales, but the covenant is not referenced in deeds for the sale of the property from the Smiths to S&S Land Development Group, which occurred in 2006. A 2009 ESD was prepared for the Site that allows the reduction of the limits of the land use restriction to the fenced areas of the two OUs plus an 80-foot buffer around the fenced areas. However, remains of drums outside the fenced area were observed during the site inspection; depending on the content of the drums and the results of the investigation of this area, EPA may consider reassessing the area requiring institutional controls.

Table 7: Institutional Control (IC) Summary Table

Media	ICs Called for in the Decision Documents	Impacted Parcel	IC Objective	Instrument in Place	Notes
Ground Water	Yes	03500000029	Restrict future Site land uses to be consistent with remedy in place.	1999 Restrictive Covenant	Ground water on the property may not be utilized as a potable water resource without the express written consent of EPA. Drilling or excavation may not be conducted without express written consent of EPA.
Surface Water	Yes	03500000029	Restrict future Site land uses to be consistent with remedy in place.	1999 Restrictive Covenant	Surface water on the property may not be utilized as potable water resources without the written consent of EPA.
Soil	Yes	03500000029	Restrict future Site land uses to be consistent with remedy in place.	1999 Restrictive Covenant	Prohibits land use for residential or any activity that will disturb the land surface without expressed permission of EPA.

6.6 Interviews

During the FYR process, interviews were conducted with parties impacted by the Site, including the current residents, landowners and regulatory agencies involved in site activities or aware of the Site. The purpose of the interviews was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy that have been implemented to date. All of the interviews were conducted during the site inspection on March 16, 2011. Interviews are summarized below and complete interviews are included in Appendix C.

Daryl Shaw: Mr. Shaw is one of the current property owners of the Site. He stated that he had the whole property surveyed before and after the retention ponds were built. Retention basins are in place and they have been inspected. They are functioning as designed. Mr. Shaw inspects them regularly and reports that they are in good shape. The only maintenance he has to perform on the basins is pulling occasional limb after storms. Additionally, Mr. Shaw stated that the water levels have not increased since the logging was completed. He stated that in January 2011, his attorney filed the ESD paperwork. The new deed restrictions removed 480 acres from the residential restrictions.

Susan Mallette: Ms. Mallette of KDEP stated that the remedy in place seems to be functioning well. She stated that the remedy originally included a buffer zone, which does not really exist any longer due to the most recent ESD. Without the buffer zone, Ms. Mallette expressed that KDEP has concerns about the Site, especially since drums are found outside of the fenced OUs. She stated that if residences are built, resulting in multiple landowners, then institutional control management could prove to be challenging. Current landowners are not amenable to allowing MACTEC access to or permission to maintain roads on the property. Ms. Mallette also reported that one resident that lives next to the bridge has been concerned about erosion eating away at his property due to water running off the Site. Ford has added riprap to prevent further erosion of the property.

Eddie Taylor: Mr. Taylor, the O&M contractor for Ford, believes that the remedy is working well and that O&M activities have good oversight. He performs normal maintenance on the treatment system. He also takes care of the security fence, monitors and controls erosion problems, and replaces signage when it is vandalized. Mr. Taylor expressed concern that if homes are built on the Site, there will be even more problems with kids getting into the fenced areas of the landfills. More than likely, they will continue to want to use the drain swells for sledding. He is very concerned that kids will damage the remedy. He believes that the schedule for ground water monitoring should be updated to annual monitoring.

Jeff Engels: Mr. Engels of MACTEC, the O&M contractor for the current property owners, believes that the remedy is performing excellently. He states that the level of maintenance and condition of the project is superior. However, Mr. Engels expressed concern about potential residential reuse and the potential of vandalism and lack of site

maintenance. MACTEC had to install a security system for the treatment building, which cost $40,000.

Resident 1: The resident felt well-informed about Site activities and that the remedy appears fine at the Site. She stated that before the cleanup the Site ruined her and her father's wells.

Resident 2: The resident has lived in the area for seven years and stated that they are not bothered by the Site. The resident did not know about the FYR. He is also unaware of any community problems regarding the Site except for his own yard. He believes that the creek needs to be cleaned out and stated that the creek is eating up his yard as it keeps rising and washes debris down, which is slowly eroding his yard. It also creates a mosquito problem. He stated that something should be done about the creek.

Resident 3: The resident is aware of the Site, but has no comments on the cleanup and current status of the remedy. The resident was not aware of any impacts of the Site on the surrounding community and did not have any concerns about the Site's safety or the protectiveness of the Site's remedy.

Resident 4: The resident is aware of the Site, but did not know that the FYR was taking place. The resident was not aware of any impacts of the Site on the surrounding community and did not have any concerns about the Site's safety or the protectiveness of the Site's remedy. The resident is very concerned about the creek. They think their youngest daughter got very sick from playing in the creek. They no longer let the kids play in the creek. Their daughter has some kind of blood disease, maybe hepatitis.

Resident 5: The resident is aware of the Site, but did not know the FYR was taking place. The resident was not aware of any impacts of the Site on the surrounding community, but she thinks that the treatment plant needs a generator or some type of back-up system for when the power goes out. She is concerned about what happens at the plant if the power is out; for instance, does their drinking water get contaminated because the treatment is not working?

Resident 6: The resident has lived in the area for 35 years and followed Site discovery and cleanup activities. The resident felt well-informed about Site activities and noted that she thinks they have done a good job on the remedy. She is unaware of any problems regarding the Site in the community.

7.0 Technical Assessment

7.1 Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions and the site inspection indicate that the Site's remedy is functioning as intended by site documents. The cleanup actions for OU1 were completed in November 1995 and O&M activities began immediately thereafter. The OU1 cleanup activities resulted in the thermal treatment of 21,000 cubic yards of contaminated soils and the construction of an 11-acre capped landfill with a leachate collection system. The cleanup actions for OU2 were completed in September 1998 and resulted in the proper consolidation and capping of the 40-acre, formerly permitted landfill, and the construction of a leachate treatment plant. The leachate collection tanks at the OU1 area were connected to the influent feed of the leachate treatment plant via a force main double-walled pipeline. The connection eliminated the need to haul OU1 leachate by truck to the OU2 leachate treatment plant or to an off-site disposal facility. OU1 and OU2 are each secured and fenced and a security camera system is in place to prevent vandalism and trespassing.

Institutional controls in the form of a 1999 restrictive covenant prevent residential or commercial development or any activity that will result in disturbance of the land surface. The restrictive covenant also restricts ground water and surface water use on site, but it is unclear if contaminated ground water is affecting surface water. A 2009 ESD was prepared for the Site that reduced the scope of the land use restriction to the fenced areas of the two OUs plus an 80-foot buffer around each fenced area. However, an updated restrictive covenant was not located at the Bullitt County records office, so the 1999 restrictive covenant remains in effect across the entire property. If the land use is proposed to change to residential in the area that is within the property boundaries but outside of the OU fenced areas, and that property is found to be contaminated, then the deed restriction will need to be modified or terminated and an Environmental Covenant pursuant to KRS 224 Subchapter 80 will need to be filed with approval of both EPA and KDEP. In addition, the existing 1999 restrictive covenant is not associated with land transfers and should be referenced in future transfers and deeds related to this property.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Exposure assumptions remain valid for ground water, surface water and soil exposure. Remediation levels for consolidation of surface soils and leachate sediments were determined by back-calculating from an individual constituent carcinogenic risk of 1×10^{-6} and an individual constituent non-carcinogenic risk of hazard quotient = 0.1 for an adult or a child, whichever was appropriate. If the calculated remediation level (or exposure point concentration) could not be accommodated by contract required quantitation limits, then a slightly higher risk was utilized and another remediation level was calculated. Toxicity data and contract required quantitation limits that were used in determining the remediation levels for soil and sediment are still valid.

The ROD identified KPDES 401 KAR 5:005 as an ARAR for surface water. A letter from the State on July 10, 1997 indicated that KPDES permit requirements were waived, contingent on site effluent meeting the criteria in the letter's attachment. In addition to the risk-based standards for 11 constituents identified in the ROD, the 1997 letter specified effluent standards for an additional 26 contaminants that must be met at the Site. The effluent standards have been updated since the ROD was issued and the Site is currently compliant with the updated effluent standards.

The OU2 ROD states that ground water monitoring requirements must comply with Sections 10 and 11 of 401 KAR 34:060, which states that "[s]hould the ground water monitoring at the Site indicate that the MCLs/MCLGs are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs and MCLGs." Current MCLs and MCLGs for site contaminants are listed in Table 8. VOCs and SVOCs have been detected above MCLs in ground water under the Site and residential use is being considered outside of the fenced area at the Site. The Site should be evaluated to determine if a ground water corrective action is necessary. The potential for vapor intrusion, should a structure be built on the Site (e.g., a residence), is unknown and should be evaluated by modeling using a hypothetical future structure.

Table 8: Current MCLs for Detected Ground Water COCs

COC	Current MCL (µg/L)[a]
Aluminum	--
Arsenic	10
Barium	2000
Cadmium	5
Calcium	--
Chromium	100
Cobalt	--
Copper	1,300[b]
Iron	300[c]
Lead	15[b]
Magnesium	--
Manganese	50[c]
Mercury	2
Nickel	--
Potassium	--
Silver	50
Sodium	--
Thallium	2
Vanadium	--
Zinc	--
beta-benzenehexachloride	--
Heptachlor	0.4
2,4-Dichlorophenol	--
bis(2-Ethylhexyl) Phthalate	6
4-Chloro-3-Methylphenol	--

COC	Current MCL (µg/L)[a]
1,1,2-Trichloroethane	5
1,1-Dichloroethane	--
1,2-Dichloroethane	5
1,2-Dichloroethene	70
Acetone	--
Benzene	5
Tetrachloroethene	5
TCE	5
Vinyl Chloride	2

a. Based on the federal Primary MCL or Secondary under the SDWA (last accessed 4/25/2011).
b. Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10 percent of tap water samples exceed the action level, then water systems must take additional steps.
c. Based on Secondary MCL.

EPA's dioxin reassessment has been developed and undergone review over many years with the participation of scientific experts in EPA and other federal agencies, as well as scientific experts in the private sector and academia. The Agency followed current cancer guidelines and incorporated the latest data and physiological/biochemical research into the assessment. The results of the assessment have currently not been finalized and have not been adopted into state or federal standards. EPA anticipates that a final revision to the dioxin toxicity numbers may be released by the end of 2011. In addition, EPA has proposed to revise the interim preliminary remediation goals (PRGs) for dioxin and dioxin-like compounds, based on technical assessment of scientific and environmental data. However, EPA has not made any final decisions on interim PRGs at this time. Therefore, the dioxin toxicity reassessment for the Site will be updated during the next FYR.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

On May 28, 2008, drums were observed at a location outside of the capped landfill area at OU1. It was initially thought to be six to 13 drums, but when the drum characterization and removal was completed in September 2009, a total of 319 drums, scraps and/or carcasses were removed. If drums are found in the future, EPA and KDEP should immediately be notified. It may be of use to have an EPA-approved generic plan or standard operating procedure in place to facilitate work in the event that additional suspect areas are discovered.

During the FYR site inspection, additional exposed drums were observed outside of the OU1 fenced area. The PRP should work with EPA and KDEP to perform a removal of the drums and possible contaminated soils associated with the drums. The O&M contractor has had difficulty gaining access from the property owner to the Site outside of the fenced areas. Access agreements between the PRP and the property owner should be evaluated to ensure the PRP has access to any drums found outside of the fenced landfill areas.

The Site and portions of the Site have changed ownership since remediation started and the site property area has variously been described as 560 acres, 500 acres, 480 acres, and 460 acres in site documents. The OU boundaries have also not been described in a consistent fashion. The current, accurate site property and OU boundaries should be identified.

7.4 Technical Assessment Summary

The review of documents, ARARs, risk assessment assumptions and the site inspection indicate that the Site's remedy is functioning as intended. The cleanup actions for OU1 were completed in November 1995 and O&M activities began immediately thereafter. The OU1 cleanup activities resulted in the thermal treatment of 21,000 cubic yards of contaminated soils and the construction of an 11-acre capped landfill with a leachate collection system. The cleanup actions for OU2 were completed in September 1998 and resulted in the proper consolidation and capping of the 40-acre, formerly permitted landfill, and the construction of a leachate treatment plant. The leachate collection tanks at the OU1 area were connected to the influent feed of the leachate treatment plant via a force main double-walled pipeline. The connection eliminated the need to haul OU1 leachate by truck to the OU2 leachate treatment plant or to an off-site disposal facility. OU1 and OU2 are each secured and fenced and a security camera system is in place to prevent vandalism and trespassing.

Institutional controls in the form of a 1999 restrictive covenant prevent residential or commercial development or any activity that will result in disturbance of the land surface. The restrictive covenant also restricts ground water and surface water use on site, but it is unclear if contaminated ground water is affecting surface water. A 2009 ESD was prepared for the Site that reduced the scope of the land use restriction to the fenced areas of the two OUs plus an 80-foot buffer around each fenced area. However, an updated restrictive covenant was not located at the Bullitt County records office, so the 1999 restrictive covenant remains in effect across the entire property. If the land use is proposed to change to residential in the area that is within the property boundaries but outside of the OU fenced areas, and that property is found to be contaminated, then the deed restriction will need to be modified or terminated and an Environmental Covenant pursuant to KRS 224 Subchapter 80 will need to be filed with approval of both EPA and KDEP. In addition, the existing 1999 restrictive covenant is not associated with land transfers and should be referenced in future transfers and deeds related to this property.

On May 28, 2008, drums were observed at a location outside of the capped landfill area at OU1. It was initially thought to be six to 13 drums, but when the drum characterization and removal was completed in September 2009, a total of 319 drums, scraps and carcasses were removed. If drums are found in the future, EPA and KDEP should immediately be notified.

During the FYR site inspection, additional exposed drums were observed outside of the OU1 fenced area. The PRP should work with EPA and KDEP to perform a removal of the drums and possible contaminated soils associated with the drums. The O&M

contractor has had difficulty gaining access from the property owner to the Site outside of the fenced areas. Access agreements between the PRP and the property owner should be evaluated to ensure the PRP has access to any drums found outside of the fenced landfill areas.

The Site and portions of the Site have changed ownership since remediation started and the site property area has variously been described as 560 acres, 500 acres, 480 acres, and 460 acres in site documents. The OU boundaries have not been described in a consistent fashion. The current, accurate site property and OU boundaries should be identified and used in future site reports, including the annual O&M reports.

The ROD identified KPDES 401 KAR 5:005 as an ARAR for surface water. A letter from the State on July 10, 1997 indicated that KPDES permit requirements were waived, contingent on site effluent meeting the criteria in the letter's attachment. In addition to the risk-based standards for 11 constituents identified in the ROD, the 1997 letter specified effluent standards for an additional 26 contaminants that must be met at the Site. The effluent standards have been updated since the ROD was issued and the Site is currently compliant with the updated effluent standards.

The OU2 ROD states that ground water monitoring requirements must comply with Sections 10 and 11 of 401 KAR 34:060, which states that "[s]hould the ground water monitoring at the Site indicate that the MCLs/MCLGs are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs and MCLGs." VOCs and SVOCs have been detected above MCLs in ground water under the Site and residential use is being considered outside of the fenced area at the Site. The Site should be evaluated to determine if a ground water corrective action is necessary. The vapor intrusion potential into hypothetical future structures should be evaluated.

EPA's dioxin reassessment has been developed and undergone review over many years with the participation of scientific experts in EPA and other federal agencies, as well as scientific experts in the private sector and academia. The Agency followed current cancer guidelines and incorporated the latest data and physiological/biochemical research into the assessment. The results of the assessment have currently not been finalized and have not been adopted into state or federal standards. EPA anticipates that a final revision to the dioxin toxicity numbers may be released by the end of 2011. In addition, EPA has proposed to revise the interim PRGs for dioxin and dioxin-like compounds, based on technical assessment of scientific and environmental data. However, EPA has not made any final decisions on interim PRGs at this time. Therefore, the dioxin toxicity reassessment for the Site will be updated during the next FYR.

8.0 Issues

Table 9 summarizes the current site issues.

Table 9: Current Site Issues

Issue	Affects Current Protectiveness (Yes or No)	Affects Future Protectiveness (Yes or No)
Remains of drums outside the fenced area were observed during the site inspection.	No	Yes
It is unknown if contaminated ground water is affecting surface water.	No	Yes
The OU2 ROD states that ground water monitoring requirements must comply with Sections 10 and 11 of 401 KAR 34:060, which states that "[s]hould the ground water monitoring at the Site indicate that the MCLs/MCLGs are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs and MCLGs." Contaminants are detected above MCLs and are increasing at some monitoring wells in site ground water sampling.	No	Yes
VOCs have been detected in site ground water monitoring wells and the future use of portions of the Site might be residential.	No	Yes
The Site and portions of the Site have changed ownership since remediation started and the site property area has variously been described as 560 acres, 500 acres, 480 acres, and 460 acres in site documents.	No	Yes
Historical documents, including the 1989 RI, describe OU1 as an 80 acre disposal area and OU2 as a 37.5 acre landfill. More recent documents refer to OU1 and OU2 as a combined total of 80 acres. The OU boundaries are not described in a consistent fashion.	No	Yes

9.0 Recommendations and Follow-up Actions

Table 10 provides recommendations to address the current site issues.

Table 10: Recommendations to Address Current Site Issues

Issue	Recommendations / Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Yes or No)	
					Current	Future
Remains of drums outside the fenced area were observed during the site inspection.	Remove drums found during the site inspection and any contaminated soil associated with the drums.	PRP	EPA	09/01/2012	No	Yes
It is unknown if contaminated ground water is affecting surface water.	Evaluate the Site to determine if contaminated ground water is affecting the surface water.	PRP	EPA	03/30/2013	No	Yes
The OU2 ROD states that ground water monitoring requirements must comply with Sections 10 and 11 of 401 KAR 34:060, which states that "[s]hould the ground water monitoring at the Site indicate that the MCLs/MCLGs are consistently exceeded, then an appropriate corrective action will be applied to comply with the MCLs and MCLGs." Contaminants are detected above MCLs and are increasing at some monitoring wells in site ground water sampling.	Evaluate the Site to determine if a ground water corrective action is necessary. Further characterization of the ground water contamination plume may be part of the evaluation.	PRP	EPA	03/30/2013	No	Yes
VOCs have been detected in site ground water monitoring wells and the future use of portions of the Site might be residential.	Use modeling to evaluate the potential for vapor intrusion in a structure built on the Site outside of the fenced areas	PRP	EPA	03/30/2013	No	Yes
The Site and portions of the Site have changed ownership since	Define the current, accurate site property boundary.	EPA	EPA	09/01/2012	No	Yes

Issue	Recommendations / Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Yes or No)	
remediation started and the site property area has variously been described as 560 acres, 500 acres, 480 acres, and 460 acres in site documents.						
Historical documents, including the 1989 RI, describe OU1 as an 80 acre disposal area and OU2 as a 37.5 acre landfill. More recent documents refer to OU1 and OU2 as a combined total of 80 acres. The OU boundaries are not described in a consistent fashion.	Using historical documents, resolve OU1 and OU2 area and boundary discrepancies and map the original, historical boundaries in future annual O&M reports and any other CERCLA documents.	PRP	EPA	03/30/2012	No	Yes

10.0 Protectiveness Statements

The remedy at both OU1 and OU2 currently protects human health and the environment in the short term because drums and contaminated soils were consolidated and capped on site, institutional controls are in place to prevent inappropriate use of the land, and nearby residents are on municipal water. However, in order for the remedy to be protective in the long term, the following actions need to be taken to ensure long-term protectiveness:

- Remove drums found during the site inspection and any contaminated soil associated with the drums.
- Evaluate the Site to determine if contaminated ground water is affecting the surface water.
- Evaluate the Site to determine if a ground water corrective action is necessary.
- Evaluate the potential for vapor intrusion.
- Define the current, accurate site property boundary.
- Using historical documents, resolve OU1 and OU2 area and boundary discrepancies and map the original, historical boundaries in future annual O&M reports and any other CERCLA documents.

11.0 Next Review

The Site requires ongoing FYRs as long as waste is left on site that does not allow for unrestricted use and unlimited exposure. The next FYR will be due within five years of the signature/approval date of this FYR.

Appendix A: List of Documents Reviewed

2006 Annual Operation and Monitoring Report, Smith's Farm Operable Units One and Two. Prepared by MACTEC for EPA Region 4. March 2007.

2007 Annual Operation and Monitoring Report, Smith's Farm Operable Units One and Two. Prepared by MACTEC for EPA Region 4. March 2008.

2008 Annual Operation and Monitoring Report, Smith's Farm Operable Units One and Two. Prepared by MACTEC for EPA Region 4. March 2009.

2009 Annual Operation and Monitoring Report, Smith's Farm Operable Units One and Two. Prepared by MACTEC for EPA Region 4. March 2010.

2010 Annual Operation and Monitoring Report, Smith's Farm Operable Units One and Two. Prepared by MACTEC for EPA Region 4. March 2011.

CERCLA Information System Site Information accessed from website http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0402059. Accessed February-May 2011.

EPA Superfund Explanation of Significant Differences. Smith's Farm NPL Site (Operable Unit Two). Brooks, Bullitt County, Kentucky. EPA Region 4. November 2009.

EPA Superfund Five-Year Review. Smith's Farm (Brooks) CERCLA NPL Site. Bullitt County, Kentucky. EPA Region 4. September 1998.

EPA Superfund Record of Decision: Smith's Farm. EPA ID: KYD097267413. OU1. Brooks, Kentucky. Prepared by EPA Region 4. September 29, 1989.

EPA Superfund Record of Decision Amendment: Smith's Farm. EPA ID: KYD097267413. OU1. Brooks, Kentucky. Prepared by EPA Region 4. September 30, 1991.

EPA Superfund Record of Decision: Smith's Farm. EPA ID: KYD097267413. OU2. Brooks, Kentucky. Prepared by EPA Region 4. September 17, 1993.

Interim Draft Drum and Debris Characterization and Disposal Report. Smith's Farm Operable Units One and Two. Prepared by MACTEC for EPA Region 4. May 6, 2011.

First Five-Year Review Report for Smiths' Farm Landfill Operable Unit 2. Brooks, Bullitt County, Kentucky. Prepared by US Army Corp of Engineers for EPA Region 4. September 2001.

Superfund Third Five-Year Review Report. Smith's Farm Landfill. Brooks, Bullitt County, Kentucky. Prepared by US Army Corp of Engineers for EPA Region 4. September 2006

Preliminary Close Out Report. Smith's Farm CERCLA NPL Site. Brooks, Bullitt County, Kentucky. EPA Region 4. September 1998.

Appendix B: Press Notice

**The U. S. Environmental Protection Agency,
Region 4 Announces the Fourth Five-Year Review
for the Smith's Farm Superfund Site
(Brooks, Bullitt County, Kentucky)**

Purpose/Objective: The U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the remedy for the Smith's Farm Superfund site (the Site) in Brooks, Kentucky. The purpose of the Five-Year Review is to ensure that the selected cleanup actions effectively protect human health and the environment.

Site Background: The 460-acre Site is a former hazardous waste disposal area located approximately 12 miles south of Louisville. Land use in the area is predominantly rural residential. The Site is bordered by deciduous forest to the north, east and west and a residential area to the south. Intermittent streams flow along the north-central portion of the Site and drain into the Unnamed Tributary of Bluelick Creek, which subsequently flows into Floyd's Fork. The Site includes an 80-acre area that was used for unpermitted disposal of drums containing hazardous waste for approximately 30 years. It also includes an approximately 40-acre landfill that was permitted by the Commonwealth of Kentucky (the State) for the disposal of inert industrial waste from 1973 to 1989; the landfill had been used for disposal of industrial waste since the 1950s. Spent paint thinners, off-specification paints, paint booth sludges, metal shavings from machining operations, asbestos, off-specification epoxies, and waste motor and transmission fluids are examples of contaminated materials disposed of at the Site. Disposal activities in both areas have resulted in contamination of on-site environmental media. Contaminants included a wide variety of volatile and semi-volatile organic compounds as well as heavy metals. Leachate flowing from the Site threatened the streams which run through the site to the nearby Salt River. Soil and surface water contamination threatened nearby residential areas.

Cleanup Actions: In 1984, at the request of the State, EPA completed the removal of several thousand drums from the unpermitted drum disposal area, and surfaced the area with clay to mitigate leachate problems. EPA designated two operable units (OUs) to address the Site's remaining contamination: OU1 (unpermitted former drum disposal area) and OU2 (formerly-permitted landfill area). EPA selected OU1's remedy in the Site's 1989 Record of Decision (ROD) and amended the ROD in 1991. The selected remedy included excavation, treatment and containment of contaminated soil, sediments and wastes in a new, 11-acre landfill, installation of retaining walls and a leachate collection system, perimeter fencing, ground water monitoring and institutional controls. EPA selected OU2's remedy in the Site's 1993 ROD. The selected remedy included waste consolidation and landfill capping, installation of a leachate collection and treatment system, perimeter fencing, ground water monitoring and institutional controls. In 1995, EPA issued an Explanation of Significant Differences (ESD) to document the installation of a new culvert and the decision not to restart the leachate collection system. Cleanup actions for OU1 were completed in November 1995. Operation and Maintenance (O&M) activities began immediately thereafter. The cleanup activities resulted in the thermal treatment of 21,000 cubic yards of contaminated soils and the construction of an 11-acre capped landfill with a leachate collection system. Cleanup actions for OU2 were completed in September 1998 and resulted in the proper consolidation and capping of the 40-acre formerly permitted landfill and the construction of a leachate treatment plant. OU1 leachate collection tanks were connected to the leachate treatment plant via a force main double-walled pipeline. The connection eliminated the need to haul leachate by truck to the leachate treatment plant or to an off-site disposal facility. Site cleanup activities are being led by the Site's potentially responsible parties, with oversight by EPA.

Five-Year Review Schedule: The National Contingency Plan requires that remedial actions resulting in any hazardous substances, pollutants or contaminants remaining at Superfund sites above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure the protection of human health and the environment. The fourth of the Five-Year Reviews for the Site will be completed by September 2011.

EPA invites community participation in the Five-Year Review process: EPA is conducting the Five-Year Review to evaluate the effectiveness of the Site's remedy and to ensure that the remedy remains protective of human health and the environment. As part of the Five-Year Review process, EPA staff are available to answer any questions about the Site. Community members who have questions about the Site or the Five-Year Review process, or who would like to participate in a community interview, are asked to contact:

Cathy Amoroso, Remedial Project Manager
Phone: 404-562-8637 E-mail: Amoroso.Cathy@epa.gov

Tonya Whitsett, Community Involvement Coordinator
Phone: Toll Free 877-718-3752, ext. 28633 E-mail: Whitsett.Tonya@epa.gov

Mailing Address: U.S. EPA Region 4, 61 Forsyth St. S.W., 11th Floor, Atlanta, GA 30303-8960

Site information is also available at the local document repository, Ridgeway Memorial Library, 127 North Walnut Street, Shepherdsville, Kentucky 40165, and online at http://www.epa.gov/region4/waste/npl/nplky/smifrmky.htm

Appendix C: Interview Forms

Smith's Farm Superfund Site		**Five-Year Review Interview Form**	
Site Name:	**Smith's Farm**	**EPA ID No.:**	**KYD097267413**
Interviewer Name:	**Rhode Bicknell**	**Affiliation:**	**Skeo Solutions**
Subject Name:	**Darryl Shaw**	**Affiliation:**	**S&S Property Land Development**
Time:	**12:00 PM**	**Date:**	**3/16/2011**
Interview Location:	**Smith's Farm**		

Interview Format (circle one): **In Person** **Phone** **Mail** **Other:**

Interview Category: Land Owner

1. What is your assessment of the current performance of the remedy in place at the Site?
   Retention basins are in place and they have been inspected. They are functioning as designed. I have not seen any increase in water levels since the logging.

2. Have you had the property re-surveyed?
   I had the whole property surveyed a year and half ago. The Basins were resurveyed as part of inspection when completed.

3. Have land use controls been implemented as per the 11/2009 ESD?
   Yes, in December 2009 or January 2010, our attorney filed paperwork. The new deed restrictions removed 480 acres from the residential restrictions.

4. What is the current condition of the retention basins, how often are they inspected, and who inspects them?
   I inspect them regularly and they are in good shape. There has been no maintenance necessary to the basins outside of pulling occasional limb after storms. I inspect them at least once a month.

5. How often are you finding that maintenance needs to be performed on the retention basins? What kind of maintenance is performed?
   No maintenance has been necessary outside of pulling limbs. Basins are well vegetated.

6. Have there been any security issues or un-authorized access to the property?
   Yes, about every day. Motorcycles and 4 wheelers come on the property. We have to leave the gate open when on the premises for emergency access reasons. Still some dumping is occurring. One of our 4 wheelers was stolen. On OU1 there has been no trespassing into actual landfill. OU2, kids use as a sledding hill. OU2 has motorcycle and 4 wheelers coming on to it. Eddie is on site often and calls if trespassers have come through gate.

7. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?
   No. Cleanup happened before I bought it.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
   The main thing is that clients do not like seeing drums on the premises. We would like stuff like that (drums) put next to the building or under a tarp or something.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Rhode Bicknell **Affiliation:** Skeo Solutions
Subject Name: Eddie Taylor **Affiliation:** MACTEC
Subject Contact Information: Plant: 502-955-5349
Time: 1:25 PM **Date:** 3/16/2011
Interview Location: Smith's Farm

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: O&M Contractor

1. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   Doing pretty good job. When I tell them there is a problem, they are very responsive.

2. What is your assessment of the current performance of the remedy in place at the Site?
   Performing as intended. I don't know how many drums are buried out there. The plans for the future depend on whether there are 200 or 20,000 drums burried. Thirty years is not going to be enough to clean leachate or to reduce leachate if thousands of drums are buried.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?
   There are some changes month to month, but I adapt the system to adapt to the changes.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.
   Yes, conducting normal maintenance operation of treatment. Activities are taking care of security fence; monitoring controlling erosion problems; moving signage.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
   No day-to-day changes in O&M activities. More safety protocols and more safety plans have been implemented.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.
   No

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.
   Monitoring data are good enough that we can monitor wells once a year, I think.
   If they decide to build homes, there will be even more problems with kids getting into the fenced areas of the landfills. They will want to use the drain swells. I am very concerned the

kids will do damage.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?
   No

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Johnny Zimmerman-Ward **Affiliation:** Skeo Solutions
Subject Name: Susan Mallette **Affiliation:** KDEP
Subject Contact Information: Susan.Mallette@ky.gov
Time: 1:15PM **Date:** 3/16/2011
Interview Location: Site

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: State Agency

1. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   Overall, MACTEC has done a good job with the maintenance of both OUs. We have concerns about the residential reuse of the property outside of the restricted area.

2. What is your assessment of the current performance of the remedy in place at the Site?
   Good, we have no concerns.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?
   Yes, one resident that lives next to the bridge has been concerned about erosion eating away at his property due to water running off the Site. Ford has added riprap to prevent further erosion of the property.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.
   KDEP visited the Site before and during logging operations and when the site operator found drums, KDEP was present for some of the cleanup.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?
   No

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?
   It is unclear what the actual status of the institutional controls is currently. If they haven't changed from the previous form, then it's fine. The current property plans are a concern if residences are built, and there are multiple landowners, institutional control management could prove to be tricky. Current landowners are not amenable to allowing MACTEC access to or permission to maintain roads on the property (landfill and treatment plant will be surrounded by private homes if residences are built). There could also be potential issues of fire with the logging and dry conditions, as well as vapor issues.

7. Are you aware of any changes in projected land use(s) at the Site?
   Yes, possible residential use is being considered.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
   The remedy in place seems to be functioning well. The remedy originally included a buffer zone which does not really exist any longer due to most recent ESD. Without the buffer KDEP has concerns about the Site, especially since drums are found outside of the OUs.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Johnny Zimmerman-Ward **Affiliation:** Skeo Solutions
Subject Name: Jeffery Engels **Affiliation:** MACTEC
Subject Contact Information: _____
Time: 1:35PM **Date:** 3/16/2011
Interview Location: Site

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: O&M Contractor

1. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   Overall, excellent. The level of maintenance and condition of the project is superior. We are suspicious of potential reuse and the potential of vandalism and lack of site maintenance if the Site is in reuse.

2. What is your assessment of the current performance of the remedy in place at the Site?
   Excellent.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?
   Defer to Judy Hartness at MACTEC (770.421.3353) for trends.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.
   Two people are on site three times a week and are in control of all O&M and sampling of the facility. They repair fences and address security issues as they come up.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
   We started sampling the Category D wells two to three years ago (confirm this start date with Judy). We no longer have access from owners to site roads outside of OU1 and OU2.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.
   We have had to install a security system for the treatment building, which was $40,000.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.
   Eddie, the site operator, is very frugal and optimizes when the opportunity arises. We have updated the analytical methods on sampling as well.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?
   We will keep it going steady as is.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Tonya Whitsett **Affiliation:** EPA Region 4
Subject Name: Resident 1 **Affiliation:** _____
Time: 1:10 **Date:** 3/16/2011
Interview Location: Resident's Home (Community Surrounding Site)

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
   Yes, I am aware of Site.

2. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   I think it is good.

3. What have been the effects of this Site on the surrounding community, if any?
   It (the Site) ruined my well water. It ruined my father's well water. We are on city water now.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
   No. Used to go back there with 4 wheeler but not now.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
   Best way to contact me is mail.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
   No. Using city water. Tore my pump down and capped it.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
   I think it's fine. They should do something about the water treatment plant behind us. There used to be raw sewage that ran down hill. It had a very bad smell to the point I could not eat outside on my patio.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Tonya Whitsett **Affiliation:** EPA Region 4
Subject Name: Resident 2 **Affiliation:** _____
Subject Contact Information: _____
Time: 1:35 **Date:** 3/16/2011
Interview Location: Resident's Home (Community Surrounding Site)

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
   Yes, I have lived here seven years.

2. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   Not bothering us none.

3. What have been the effects of this Site on the surrounding community, if any?
   Not as far as I know. We keep kids out of creek.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
   No, not as far as I know. Four wheelers ride up creek.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
   No I had heard that there was going to be a review. Wife gets paper once in a while.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
   No, we are not on well water. We use city water.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
   No. Creek needs to be cleaned out. The creek is eating up my yard. It keeps rising and washes things down and it is slowly eating up my yard. It also creates a massive mosquito problem. They really need to do something about the creek.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Tonya Whitsett **Affiliation:** EPA Region 4
Subject Name: Resident 3 **Affiliation:** _____
Subject Contact Information: _____
Time: _____ **Date:** 3/16/2011
Interview Location: Resident's Home (Community Surrounding Site)

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
   Yes, I am aware of Site.

2. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   No comment, did they bury drums?

3. What have been the effects of this Site on the surrounding community, if any?
   None that I know of.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
   No.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
   Newspaper.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
   Yes, but it is closed. We are on city water now.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
   I am concerned about the water quality, but I know you all don't have anything to do with that.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Tonya Whitsett **Affiliation:** EPA Region 4
Subject Name: Resident 4 **Affiliation:** _____
Subject Contact Information: _____
Time: 3:20 **Date:** 3/16/2011
Interview Location: Resident's Home (Community Surrounding Site)

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
   Yes.

2. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   Not here at the time it was cleaned up.

3. What have been the effects of this Site on the surrounding community, if any?
   Not as far as I know.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
   No.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
   I did not know that there was a review going on.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
   No.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
   We are very concerned about the water in the creek. We think our little girl got very sick from playing in the creek. We no longer let the kids play in the creek. She has some kind of blood thing, maybe hepatitis. She may have gotten from playing in the creek because there is sewage sometimes in the creek.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Tonya Whitsett **Affiliation:** EPA Region 4
Subject Name: Resident 5 **Affiliation:** _____
Subject Contact Information: _____
Time: 3:30 **Date:** 3/16/2011
Interview Location: Resident's Home (Community Surrounding Site)

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
   Yes, I am aware of Site. Never been back there.

2. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   Never been back there.

3. What have been the effects of this Site on the surrounding community, if any?
   Not that I hear of.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
   I think the plant needs a generator or a back up system. When the power went out, we got our power back fast because ours is the same as the plant. What happens if the electricity goes down? Does that stuff go back into our water?

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
   Best way to contact me is mail.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
   No. Using city water.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
   The creek smells bad and all kinds of dangerous stuff washes down.

Smith's Farm Superfund Site **Five-Year Review Interview Form**

Site Name: Smith's Farm **EPA ID No.:** KYD097267413
Interviewer Name: Tonya Whitsett **Affiliation:** EPA Region 4
Subject Name: Resident 6 **Affiliation:** _____
Subject Contact Information: _____
Time: _____ **Date:** 3/16/2011
Interview Location: Resident's Home (Community Surrounding Site)

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
   Yes, been here 35 years.

2. What is your overall impression of the project; including cleanup, maintenance, and reuse activities (as appropriate)?
   Seems like they have done a pretty good job at the Site.

3. What have been the effects of this Site on the surrounding community, if any?
   Not really.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
   Not that I am aware of, no concerns about Site.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?
   Yes, no other suggestions.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
   No. Using city water.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?
   No, except the city won't clean out the ditch in front of my house. They just come and messed it up without fixing it back.

Appendix D: Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site name: Smith's Farm	**Date of inspection: 3/16/2011**
Location and Region: Brooks, Kentucky, Region 4	**EPA ID:** KYD097267413
Agency, office, or company leading the five-year review: EPA, Region 4	**Weather/temperature:**

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☒ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other _____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☒ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager**	Eddie Taylor Name	O&M Operator Title	03/16/2011 Date
Interviewed ☒ at site ☐ at office ☐ by phone Phone no. 502-817-1270 Problems, suggestions; ☐ Report attached _____			
2. **O&M staff**	Jeff Engels Name	MACTEC O&M Title	03/16/2011 Date
Interviewed ☒ at site ☐ at office ☐ by phone Phone no. _____ Problems, suggestions; ☐ Report attached _____			

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.). Fill in all that apply.

Agency Owner				
Contact	Daryl Shaw	Owner	03/16/2011	502-639-3075
	Name	Title	Date	Phone No.
Problems; suggestions; ☐ Report attached see Appendix C				
Agency KDEP				
Contact	Susan Mallette	_____	03/16/2011	_____
	Name	Title	Date	Phone No.
Problems; suggestions; ☐ Report attached _____				
Agency _____				
Contact	_____	_____	_____	_____
	Name	Title	Date	Phone No.
Problems; suggestions; ☐ Report attached see Appendix C				
Agency _____				
Contact	_____	_____	_____	_____
	Name	Title	Date	Phone No.
Problems; suggestions; ☐ Report attached see Appendix C				
Agency _____				
Contact	_____	_____	_____	_____
	Name	Title	Date	Phone No.
Problems; suggestions; ☐ Report attached see Appendix C				

4. **Other interviews** (optional) ☒ Report attached

Resident 1, 2, 3, 4, 5, 6

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☒ O&M manual	☒ Readily available	☒ Up to date	☐ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks: _____

2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☒ Up to date	☐ N/A
	☒ Contingency plan/emergency response plan	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: _____			
3.	**O&M and OSHA Training Records**	☐ Readily available	☒ Up to date	☐ N/A
	Remarks: _____			

4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
	☐ Waste disposal, POTW	☒ Readily available	☐ Up to date	☐ N/A
	☒ Other permits Solid Waste	☒ Readily available	☐ Up to date	☐ N/A
	Remarks: _____			
5.	**Gas Generation Records**	☒ Readily available	☐ Up to date	☐ N/A
	Remarks: Gas Vents sampled in late 2008.			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
7.	**Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: _____			
8.	**Leachate Extraction Records**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: _____			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A
	☒ Water (effluent)	☒ Readily available	☐ Up to date	☐ N/A
	Remarks: Annual report			
10.	**Daily Access/Security Logs**	☐ Readily available	☒ Up to date	☐ N/A
	Remarks: There is no security log, but the security system logs all entries.			

IV. O&M COSTS

1.	**O&M Organization**	
	☐ State in-house	☐ Contractor for State
	☐ PRP in-house	☒ Contractor for PRP
	☐ Federal Facility in-house	☐ Contractor for Federal Facility
	☐ _____	

2. **O&M Cost Records**

☒ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate $425,000 ☐ Breakdown attached

Total annual cost by year for review period if available

From 01/01/2006	To 12/31/2006	$358,627	☐ Breakdown attached
Date	Date	Total cost	
From 01/01/2007	To 12/31/2007	$360,004	☐ Breakdown attached
Date	Date	Total cost	
From 01/01/2008	To 12/31/2008	$300,819	☐ Breakdown attached
Date	Date	Total cost	
From 01/01/2009	To 12/31/2009	$483,510	☐ Breakdown attached
Date	Date	Total cost	
From 01/01/2010	To 12/31/2010	$441,111	☐ Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☒ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks: Signs posted all along perimeter of property.

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by) Plant manager on site at least three times a week.

Frequency Three times a week

Responsible party/agency PRP, Landowner

Contact	_____	_____	mm/dd/yyyy	_____
	Name	Title	Date	Phone no.

Reporting is up-to-date	☐ Yes	☐ No	☐ N/A
Reports are verified by the lead agency	☐ Yes	☐ No	☐ N/A
Specific requirements in deed or decision documents have been met	☐ Yes	☐ No	☐ N/A
Violations have been reported	☐ Yes	☐ No	☐ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: _____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☐ No vandalism evident

Remarks: Since the whole site is not secure, there are hunters and 4 wheelers that enter Site. Both landfill mounds are secured, as is the treatment plant. When the gate is open for monitoring, people can and do get in. The signs are stolen regularly.

2. **Land use changes on site** ☒ N/A

Remarks: _____

3. **Land use changes off site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. Roads damaged ☒ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1.	**Settlement** (Low sp□ts)	☐ Location shown on site□map	☒ Settlement not evident
	Arial extent _____		Depth _____
	Remarks: _____		
2.	**Cracks**	☐ Location shown on site map	☒Cracking not evident
	Lengths _____	Widths _____	Depths _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☐ Erosion not evident
	Arial extent _____		Depth _____
	Remarks: small area of erosion noted on OU2		
4.	**Holes**	☐ Location shown on site map	☐ Holes not evident
	Arial extent _____		Depth _____
	Remarks: Small mouse holes evident in the let down channels were pointed out. Mr. Taylor repairs them regularly when discovered.		
5.	**Vegetative Cover**	☒ Grass	☒ Cover properly established
	☒ No signs of stress	☐ Trees/Shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	**Alternative Cover** (armored rock, concrete, etc.)		☐ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on site map	☒ Bulges not evident
	Arial extent _____		Height _____
	Remarks: _____		
8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on site map	Arial extent _____
	☒ Ponding	☐ Location shown on site map	Arial extent _____
	☐ Seeps	☐ Location shown on site map	Arial extent _____
	☐ Soft subgrade	☐ Location shown on site map	Arial extent _____
	Remarks: Slight ponding noted in OU2		
9.	**Slope Instability**	☐ Slides	☐ Location shown on site map
	☒ No evidence of slope instability		
	Arial extent _____		
	Remarks: _____		
B. Benches		☐ Applicable	☒ N/A
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		

1.	**Flows Bypass Bench**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
2.	**Bench Breached**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
3.	**Bench Overtopped**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
C. Letdown Channels		☒ Applicable	☐ N/A
	(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	**Settlement** (Low spots)	☐ Location shown on site map	☒ No evidence of settlement
	Arial extent _____		Depth _____
	Remarks: _____		
2.	**Material Degradation**	☐ Location shown on site map	☒ No evidence of degradation
	Material type_____		Arial extent _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☒ No evidence of erosion
	Arial extent _____		Depth _____
	Remarks: _____		
4.	**Undercutting**	☐ Location shown on site map	☒ No evidence of undercutting
	Arial extent _____		Depth _____
	Remarks: _____		
5.	**Obstructions**	Type _____	☒ No obstructions
	☐ Location shown on site map	Arial extent _____	
	Size _____		
	Remarks: _____		
6.	**Excessive Vegetative Growth**	Type _____	
	☒ No evidence of excessive growth		
	☐ Vegetation in channels does not obstruct flow		
	☐ Location shown on site map	Arial extent _____	
	Remarks: _____		
D. Cover Penetrations		☒ Applicable	☐ N/A

1.	**Gas Vents**	☐ Active	☒ Passive	
	☐ Properly secured/locked	☒ Functioning	☒ Routinely sampled	☒ Good condition
	☐ Evidence of leakage at penetration		☐ Needs Maintenance	☐ N/A
	Remarks: _____			
2.	**Gas Monitoring Probes**			
	☒ Properly secured/locked	☒ Functioning	☐ Routinely sampled	☒ Good condition
	☐ Evidence of leakage at penetration		☐ Needs maintenance	☐ N/A
	Remarks: _____			
3.	**Monitoring Wells** (within surface area of landfill)			
	☒ Properly secured/locked	☒ Functioning	☒ Routinely sampled	☒ Good condition
	☐ Evidence of leakage at penetration		☐ Needs Maintenance	☐ N/A
	Remarks: _____			
4.	**Extraction Wells Leachate**			
	☐ Properly secured/locked	☒ Functioning	☒ Routinely sampled	☒ Good condition
	☐ Evidence of leakage at penetration		☐ Needs Maintenance	☐ N/A
	Remarks: _____			
5.	**Settlement Monuments**	☐ Located	☐ Routinely surveyed	☒ N/A
	Remarks: _____			
E. Gas Collection and Treatment		☐ Applicable	☒ N/A	
1.	**Gas Treatment Facilities**			
	☐ Flaring	☐ Thermal destruction		☐ Collection for reuse
	☐ Good condition	☐ Needs Maintenance		
	Remarks: _____			
2.	**Gas Collection Wells, Manifolds and Piping**			
	☐ Good condition	☐ Needs Maintenance		
	Remarks: _____			
3.	**Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)			
	☐ Good condition	☐ Needs Maintenance	☐ N/A	
	Remarks: _____			
F. Cover Drainage Layer		☒ Applicable	☐ N/A	
1.	**Outlet Pipes Inspected**	☒ Functioning	☐ N/A	
	Remarks: _____			
2.	**Outlet Rock Inspected**	☒ Functioning	☐ N/A	
	Remarks: _____			
G. Retention/Sedimentation Ponds		☒ Applicable	☐ N/A	

1.	**Siltation**	Area extent _____	Depth _____	☐ N/A
	☒ Siltation not evident			
	Remarks: _____			
2.	**Erosion**	Area extent _____	Depth _____	
	☒ Erosion not evident			
	Remarks: _____			
3.	**Outlet Works**	☐ Functioning		☒ N/A
	Remarks: _____			
4.	**Dam**	☐ Functioning		☒ N/A
	Remarks: _____			
H. Retaining Walls		☒ Applicable	☐ N/A	
1.	**Deformations**	☐ Location shown on site map		☒ Deformation not evident
	Horizontal displacement _____		Vertical displacement _____	
	Rotational displacement _____			
	Remarks: _____			
2.	**Degradation**	☐ Location shown on site map		☒ Degradation not evident
	Remarks: _____			
I. Perimeter Ditches/Off-Site Discharge		☒ Applicable	☐ N/A	
1.	**Siltation**	☐ Location shown on site map		☒ Siltation not evident
	Area extent _____			Depth _____
	Remarks: _____			
2.	**Vegetative Growth**	☐ Location shown on site map		☐ N/A
	☒ Vegetation does not impede flow			
	Area extent _____			Type _____
	Remarks: _____			
3.	**Erosion**	☐ Location shown on site map		☒ Erosion not evident
	Area extent _____			Depth _____
	Remarks: _____			
4.	**Discharge Structure**	☒ Functioning		☐ N/A
	Remarks: _____			
VIII. VERTICAL BARRIER WALLS		☒ Applicable	☐ N/A	
1.	**Settlement**	☐ Location shown on site map		☒ Settlement not evident
	Area extent _____			Depth _____
	Remarks: _____			

2. **Performance Monitoring** Type of monitoring _____

☒ Performance not monitored

Frequency _____ ☐ Evidence of breaching

Head differential _____

Remarks: _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**

☒ Good condition ☒ All required wells properly operating ☐ Needs Maintenance ☐ N/A

Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**

☒ Good condition ☒ Needs Maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☒ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps, and Pipelines ☒ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**

☐ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be pr□vided

Remarks: _____

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)

☒ Metals removal ☐ Oil/water separation ☐ Bi□remediation

☒ Air stripping ☒ Carbon adsorbers

☒ Filters Bag Filter

☐ Additive (e.g., chelation agent, flocculent) _____

☐ Others _____

☒ Good condition ☐ Needs Maintenance

☒ Sampling ports properly marked and functional

☒ Sampling/maintenance log displayed and up to date

☒ Equipment properly identified

☒ Quantity of groundwater treated annually _____

☐ Quantity of surface water treated annually _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☒ Good condition ☐ Needs Maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☒ Good condition ☒ Proper secondary containment ☐ Needs Maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☒ Good condition ☐ Needs Maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☒ All required wells located ☐ Needs Maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring data suggests:**

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☒ N/A

Remarks: _____

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

For both OU1 and OU2, the RAOs are to reduce risk associated with direct exposure of humans and fauna to landfill waste and contaminated on-site surface soils, contaminated on-site surface waters and ground waters, contaminated on-site stream sediments, and contaminated on-site leachate and leachate sediments.

The remedy is effective and functioning as intended by the decision documents for the Site.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

No issues or observations related to the implementation and scope of O&M activities were observed or noted. The Site is regularly inspected and maintained in accordance with the O&M Plan.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

Discovery of drums near OU1; Ponding at OU2.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None.

Appendix E: Photographs from Site Inspection Visit

Warning signage at main access gate to OU2

Main access gate to OU2

OU2 landfill mound

OU1 fence

OU1 deep well gas vent

OU1 retaining wall

Settlement marker for OU1

Looking north on top of OU1

Logging roads and erosion near retention pond

Drum remains found north of the OU1 landfill

Letdown channel at OU2

Extraction well at OU2

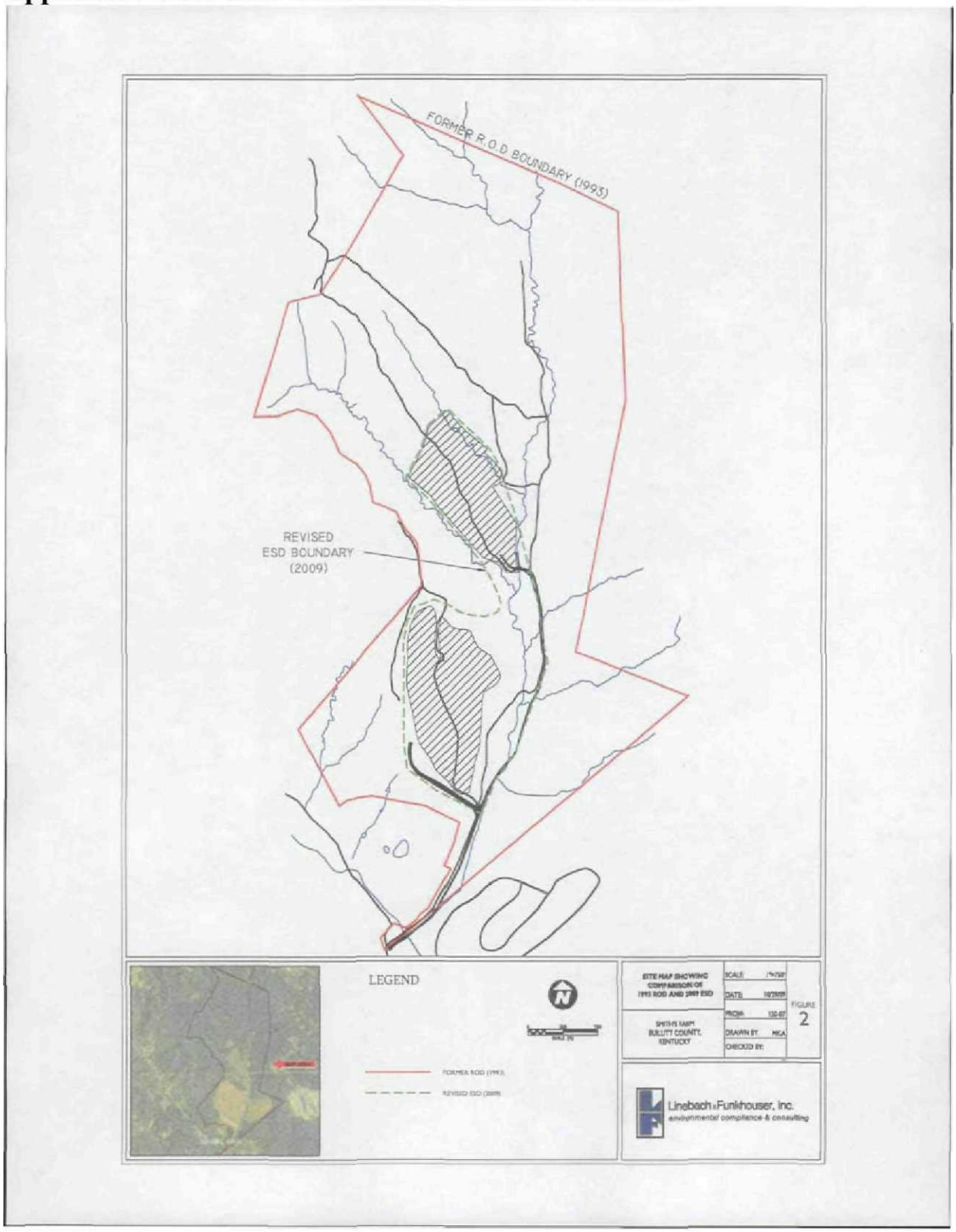
Small area of erosion on OU2

Carbon activated vessel

Package metals removal station

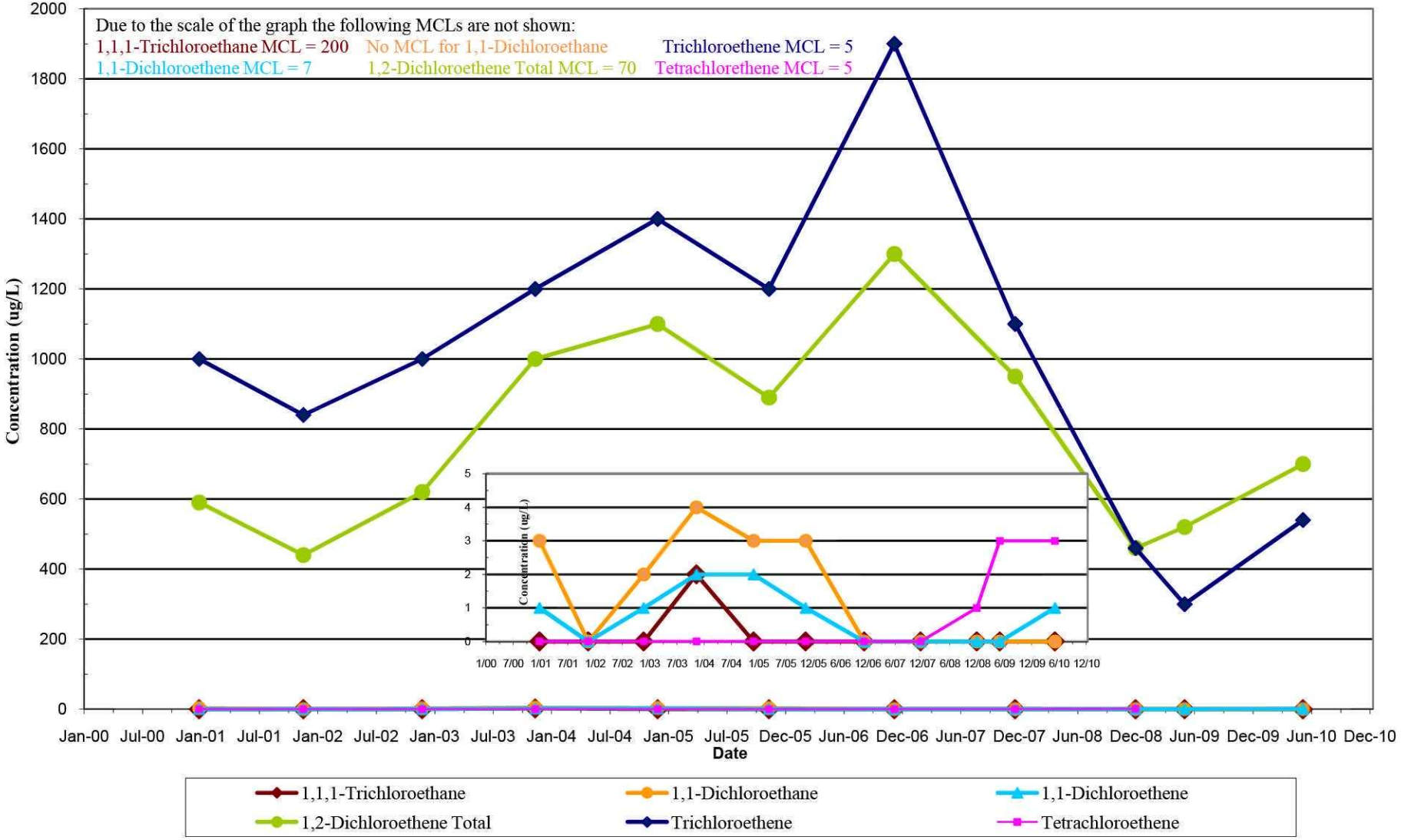
Filter press dewatering

Appendix F: 2009 ESD Institutional Control Boundaries



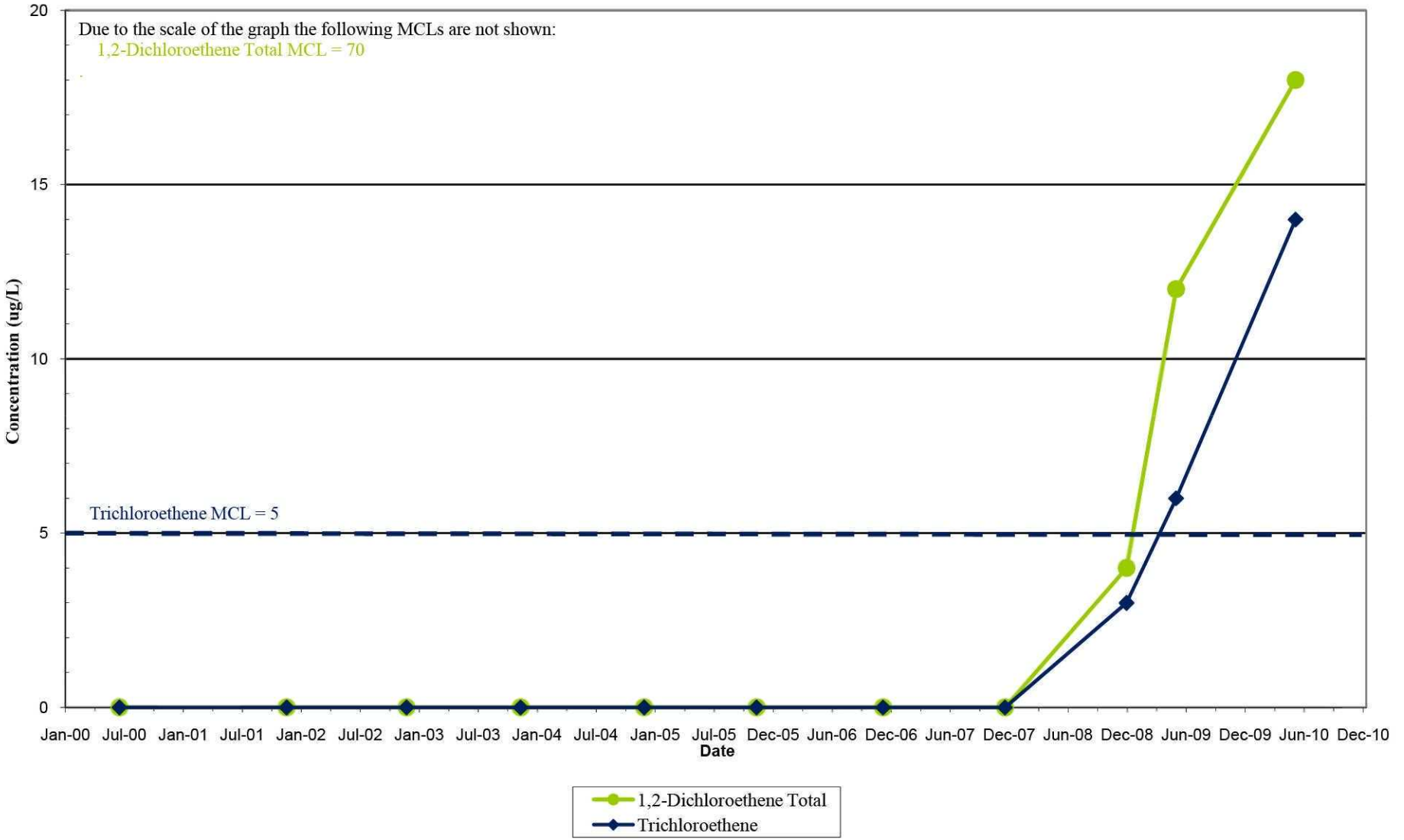
Appendix G: Ground Water Monitoring Trend Graphs

Figure 11
MW-11
Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



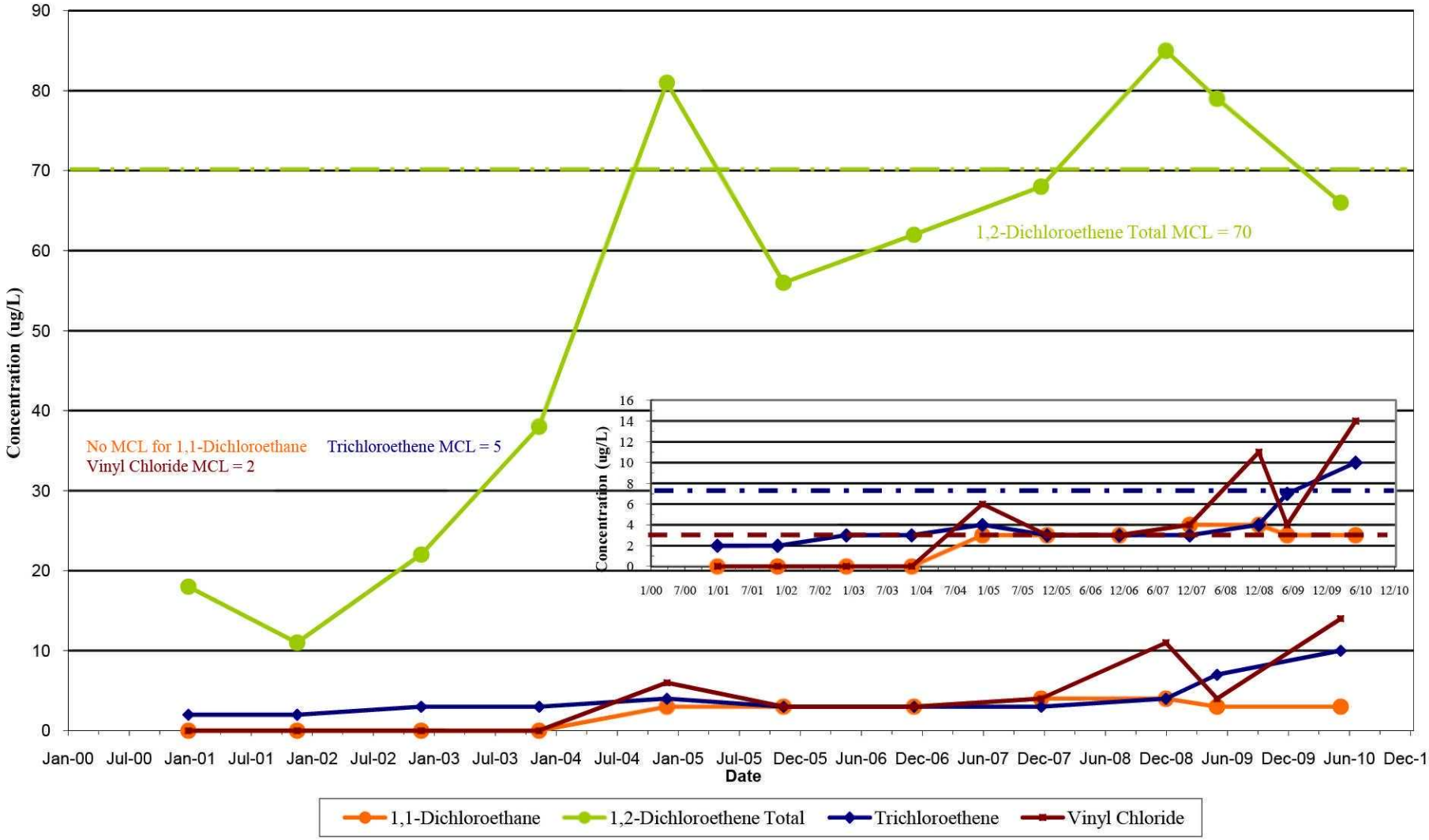
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 12
MW-12
Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



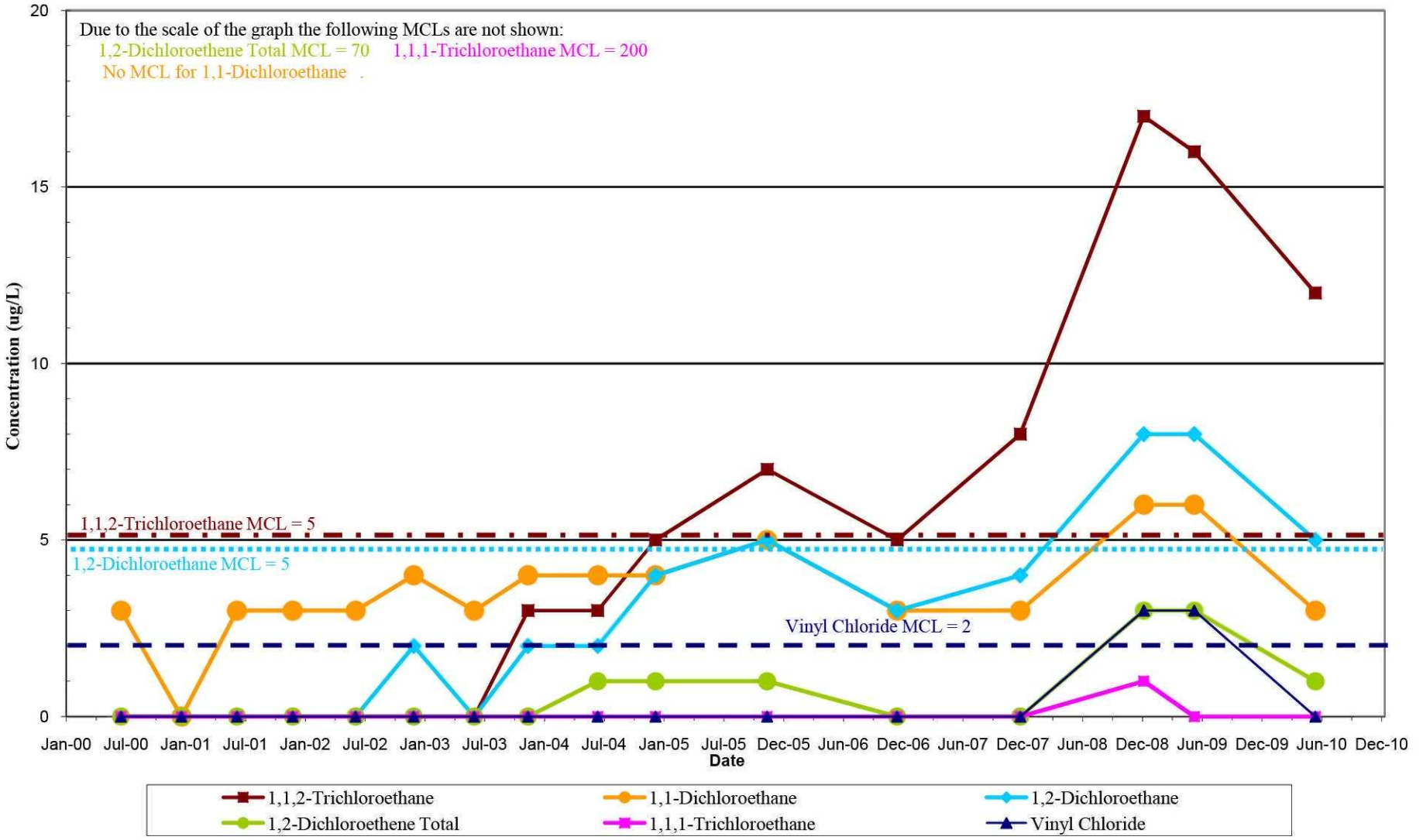
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 13
MW-15
Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



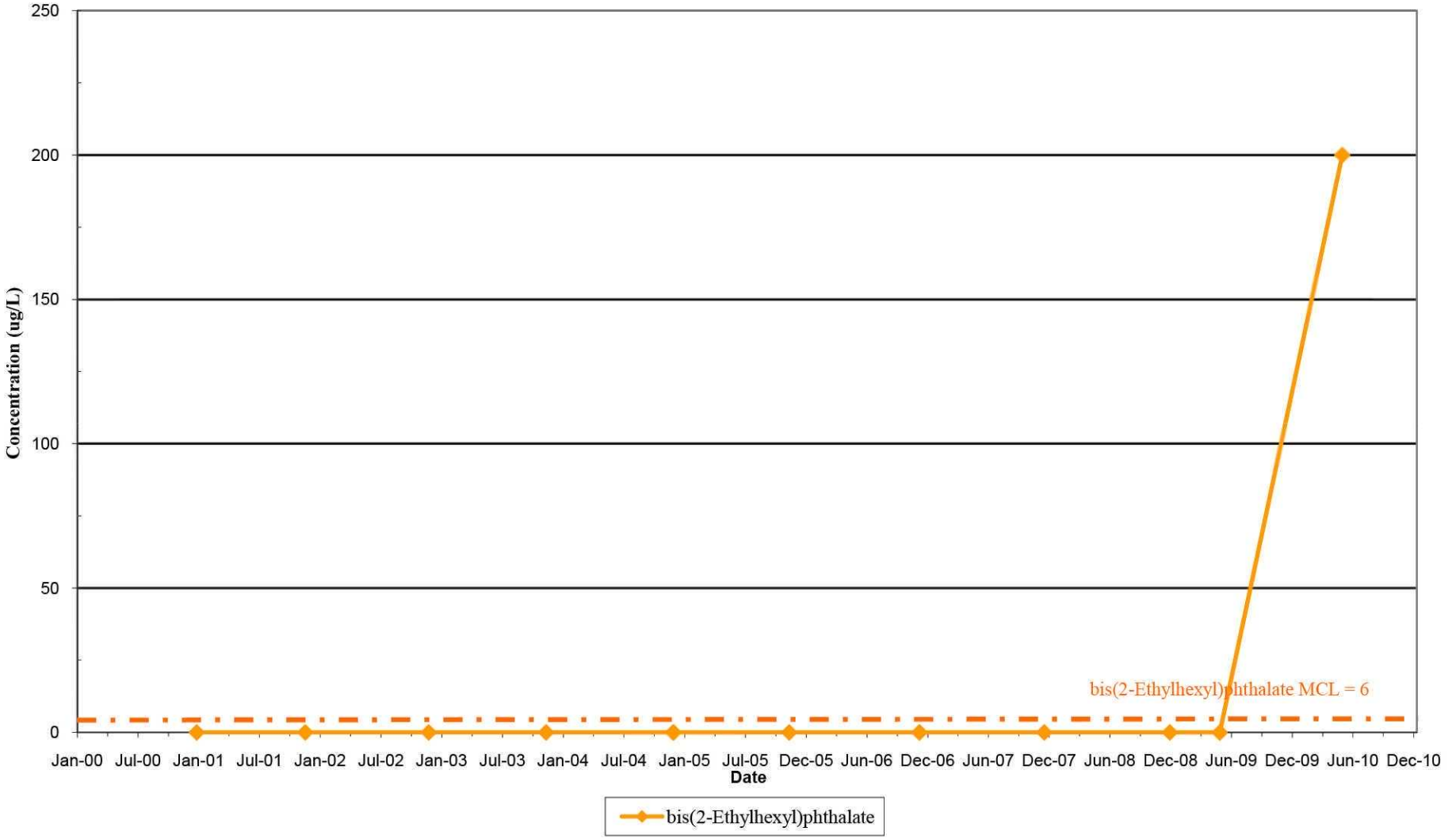
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 14
MW-30
Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



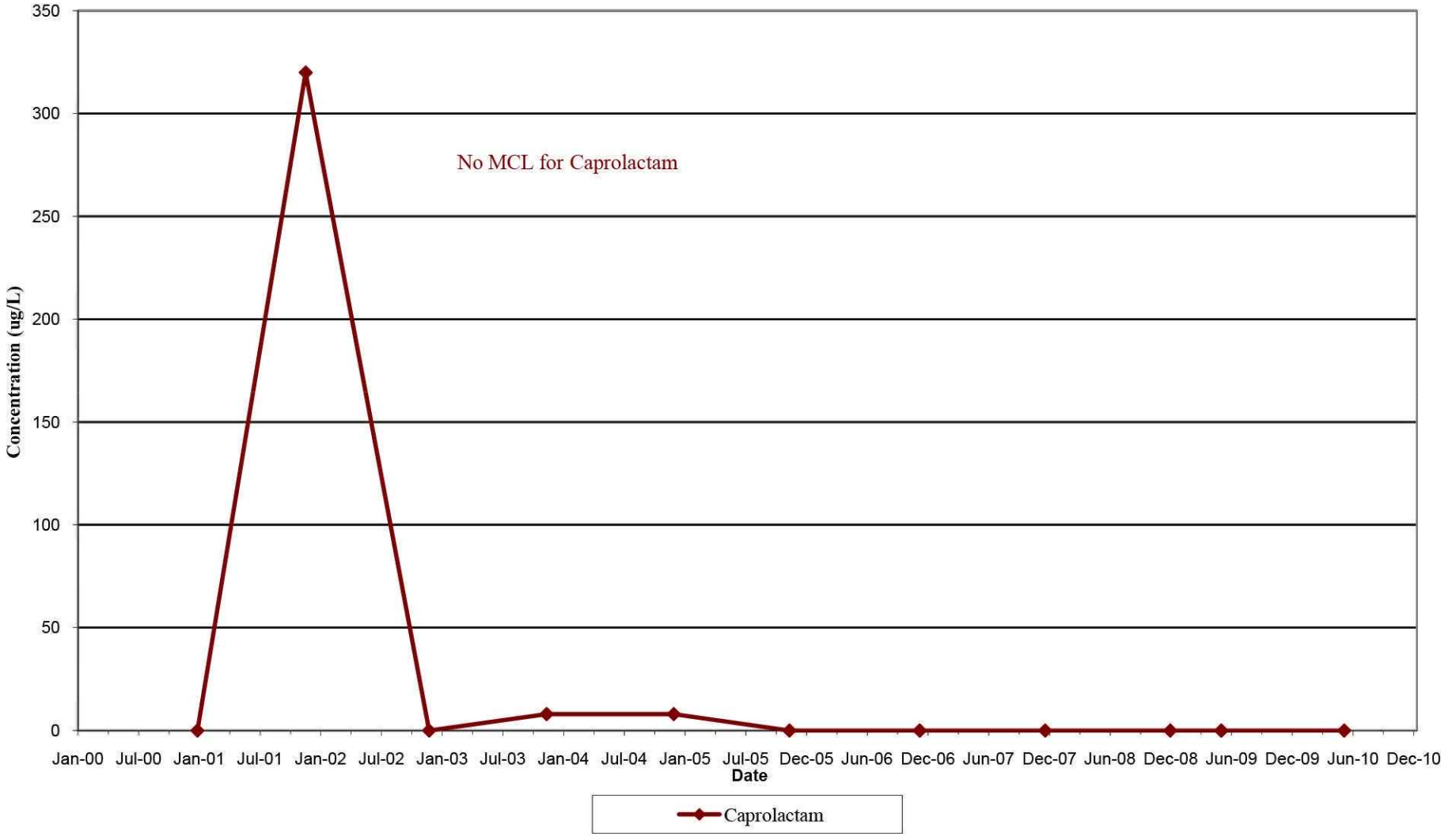
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 15
MW-4
Semi-Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



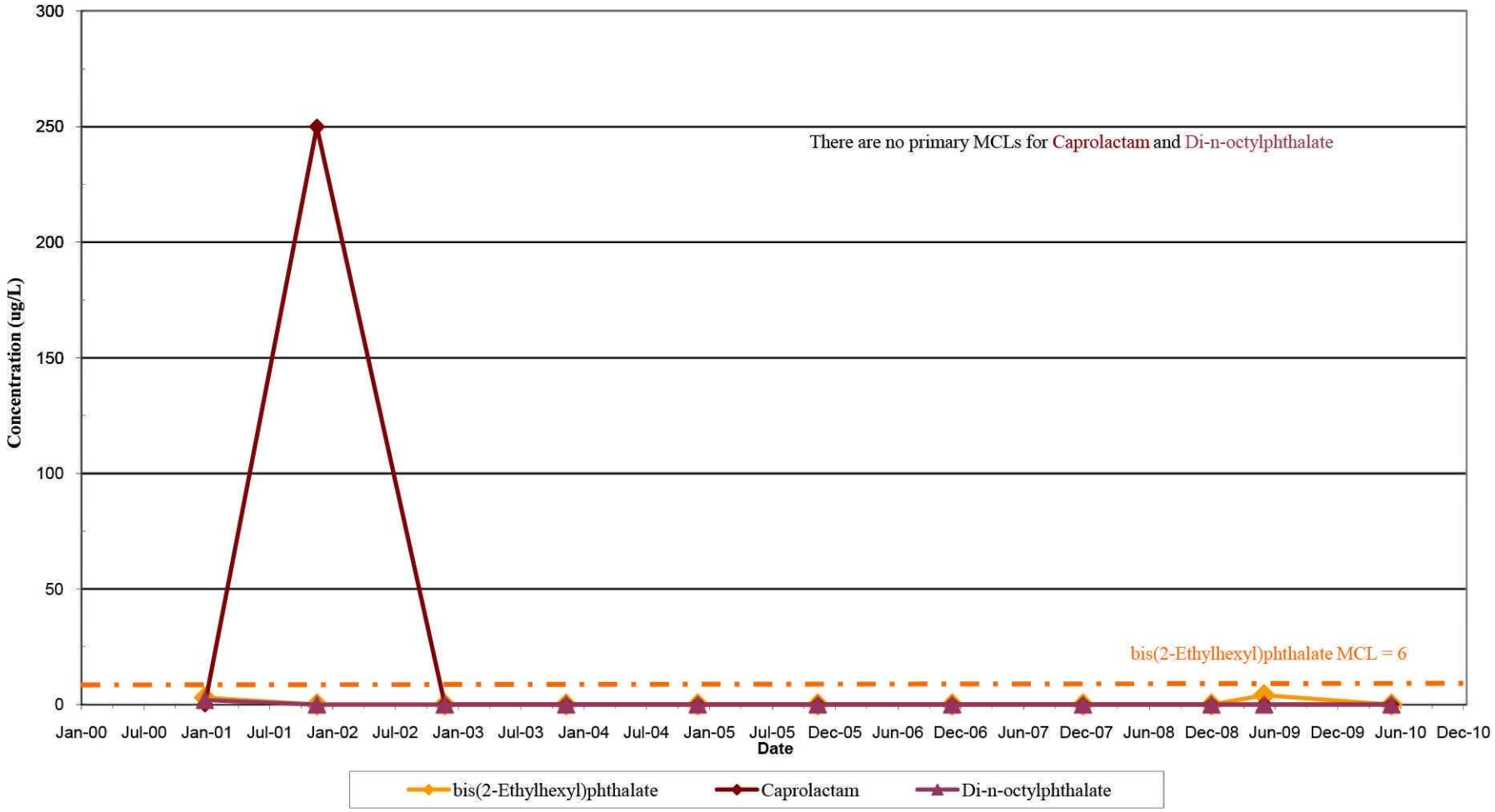
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 16
MW-11
Semi-Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



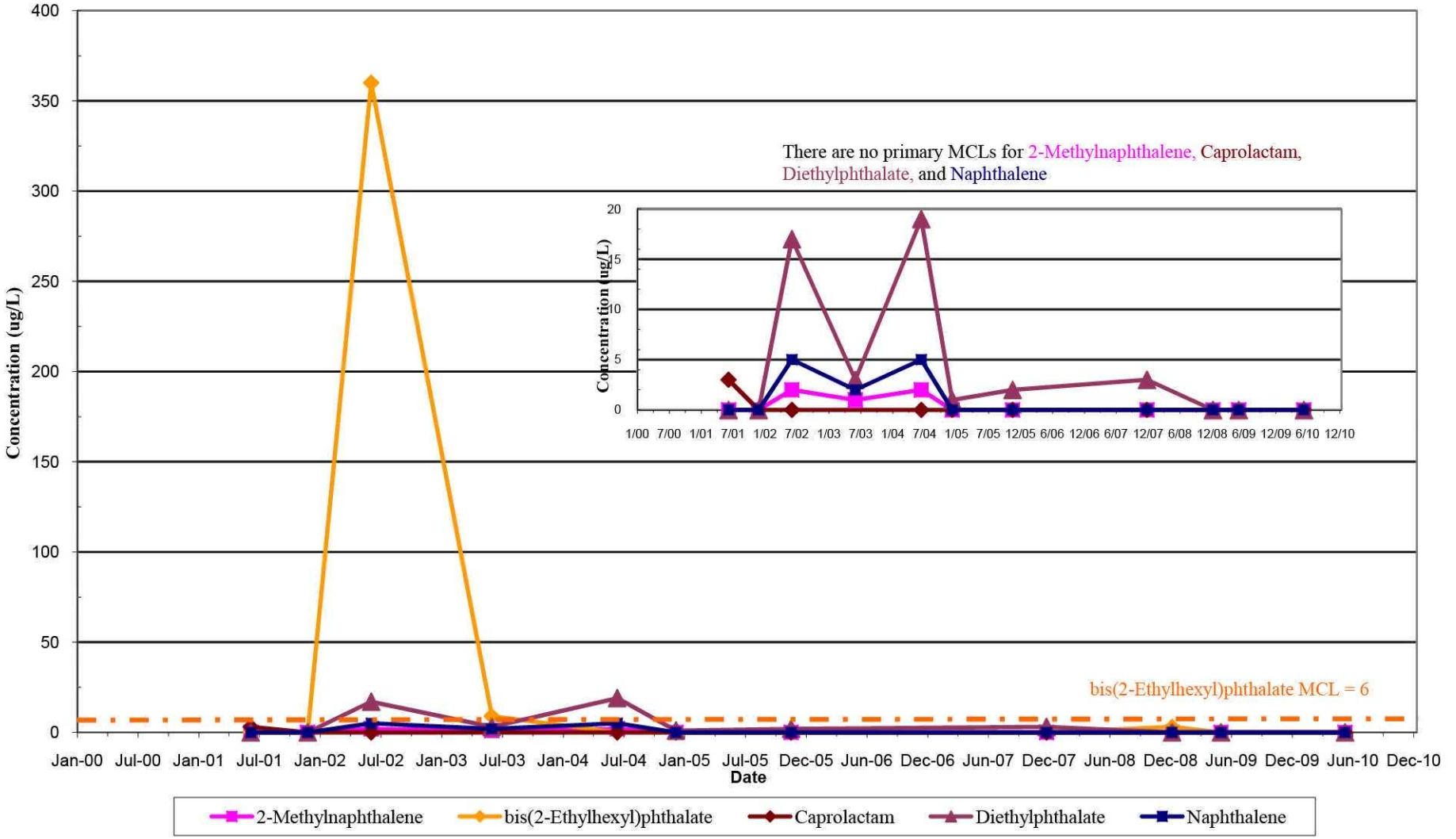
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 17
MW-15
Semi-Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



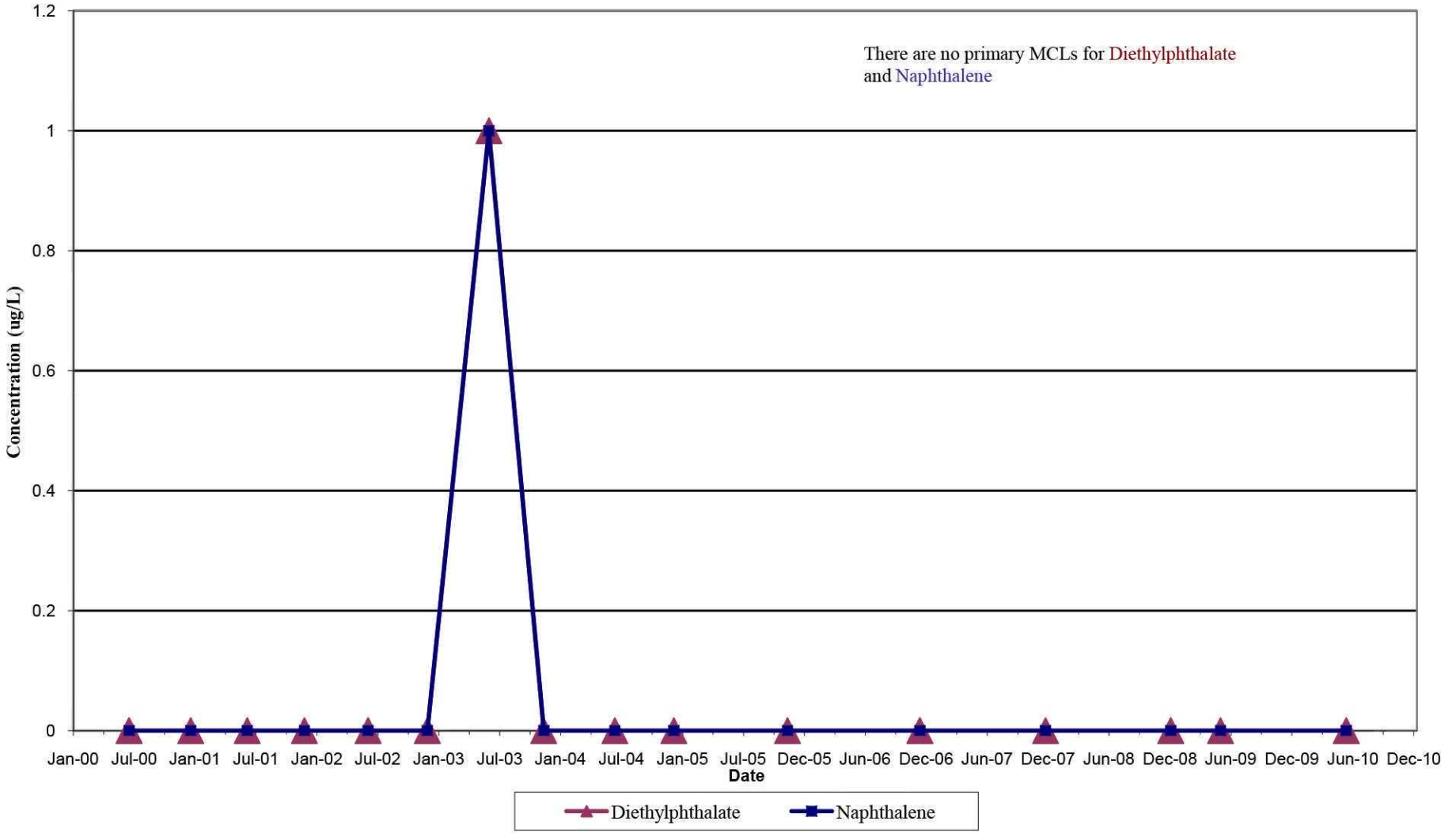
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 18
MW-25
Semi-Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



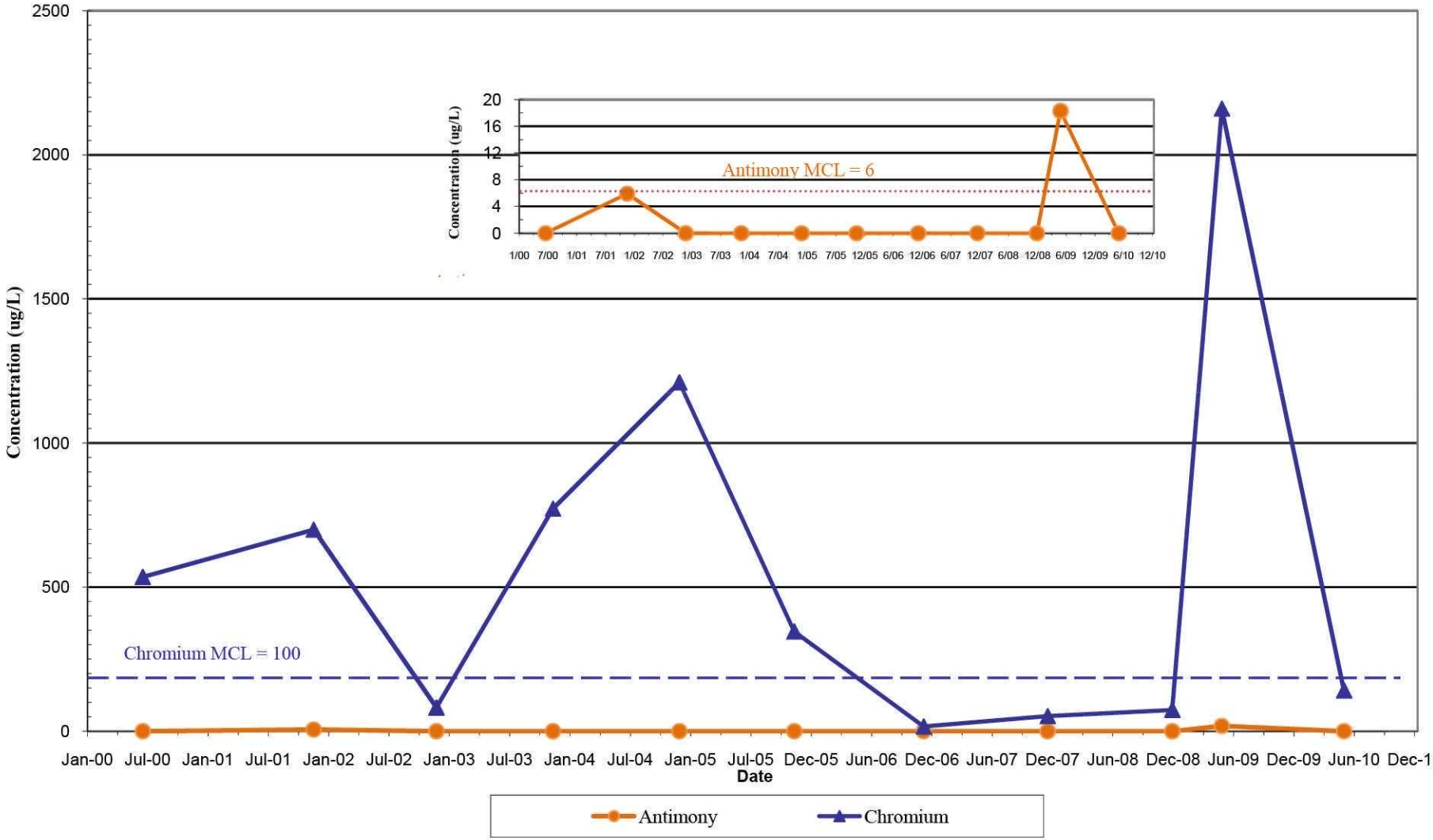
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 19
MW-30
Semi-Volatile Organic Compounds
2000-2010
Smith's Farm - Shepherdsville, KY



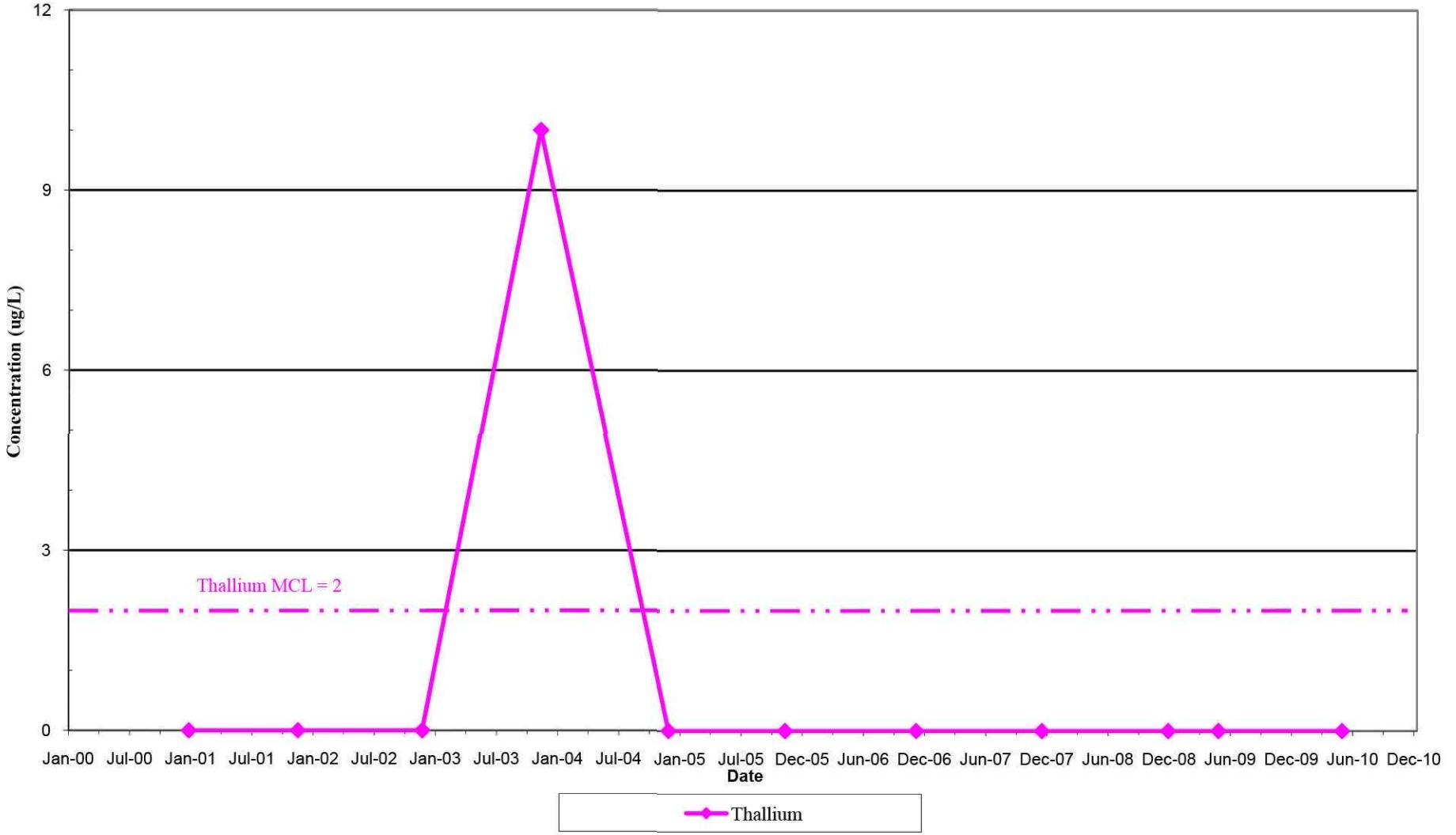
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 20
MW-3
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



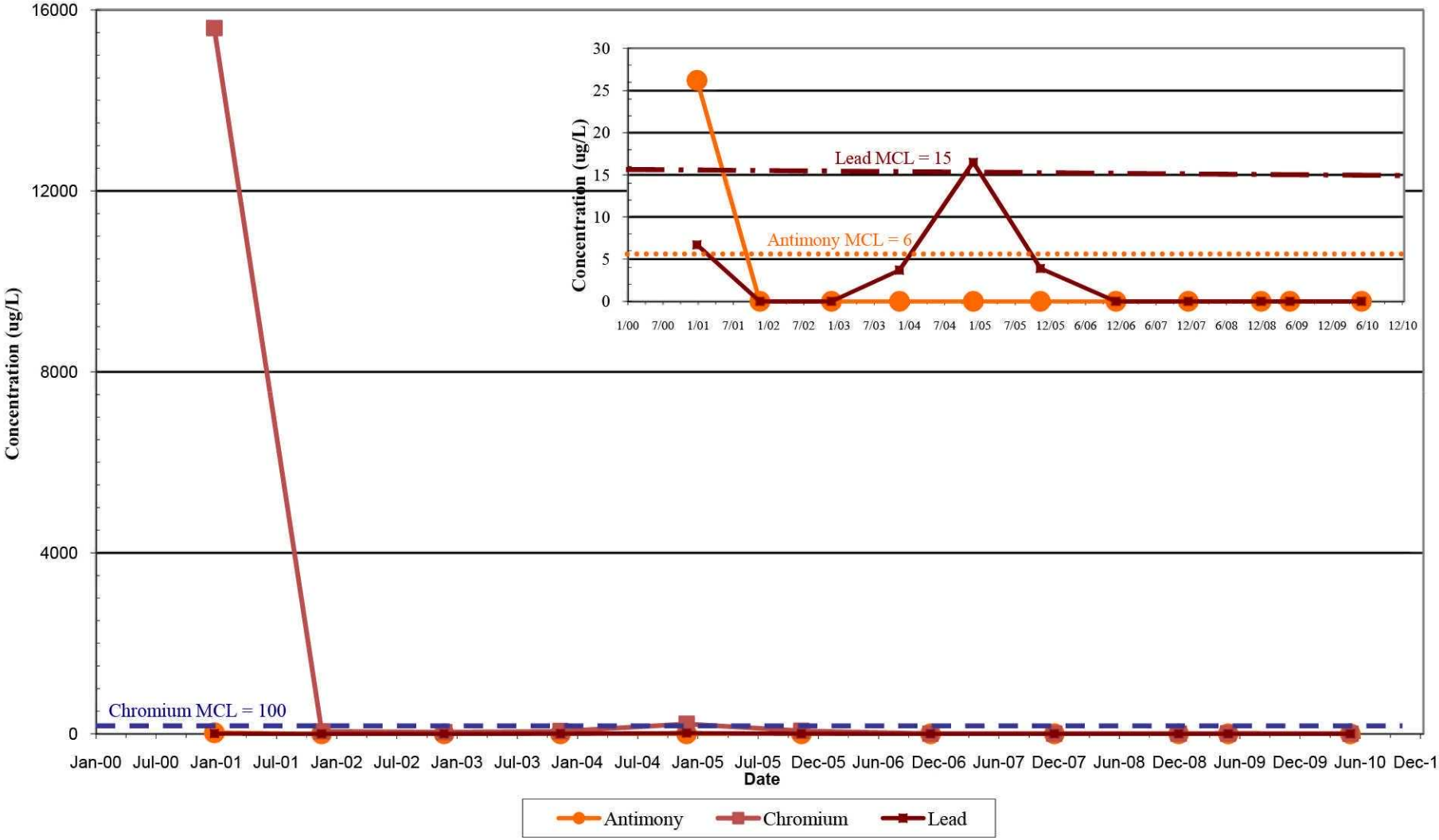
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 21
MW-4
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



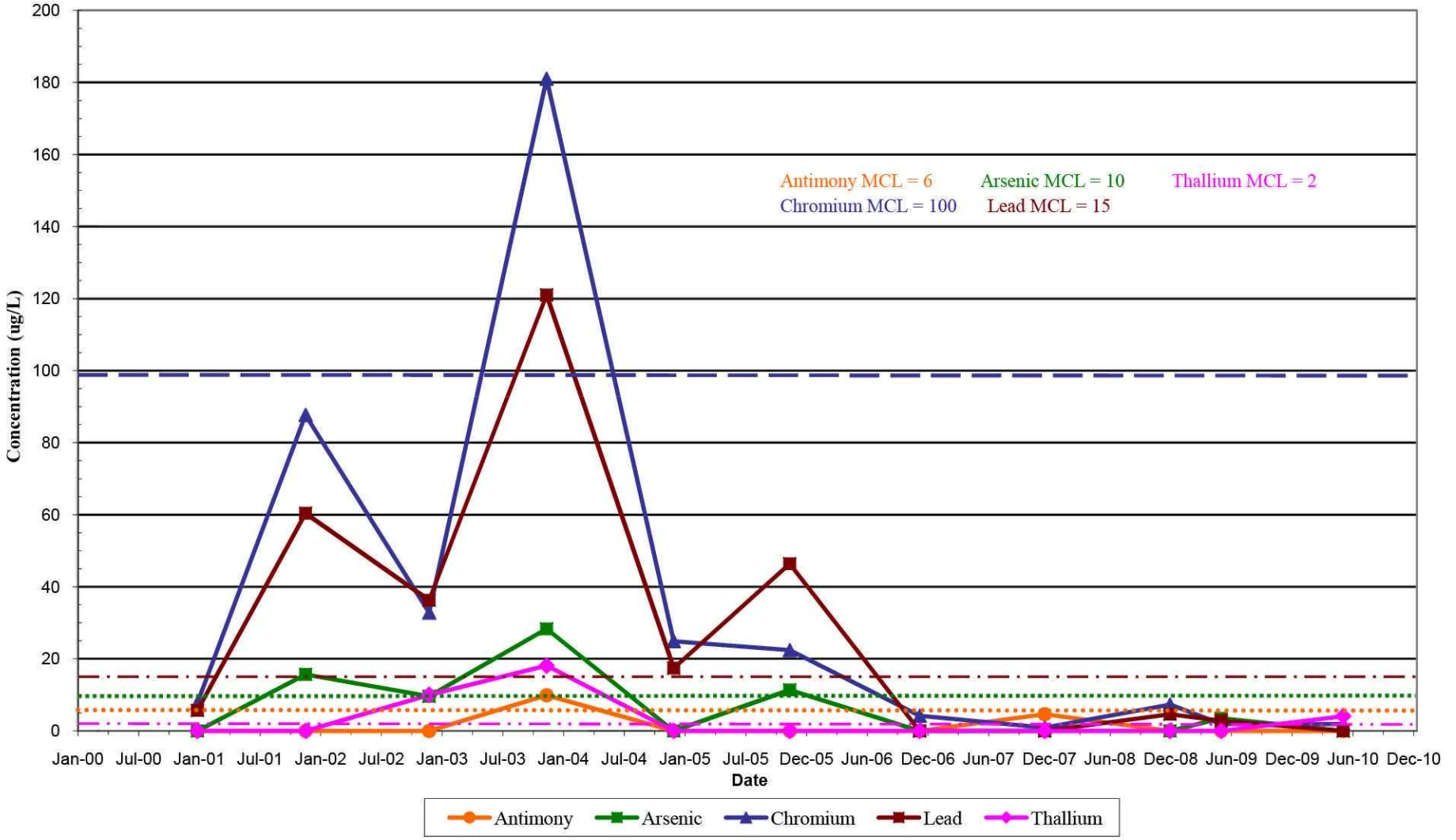
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 22
MW-5
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



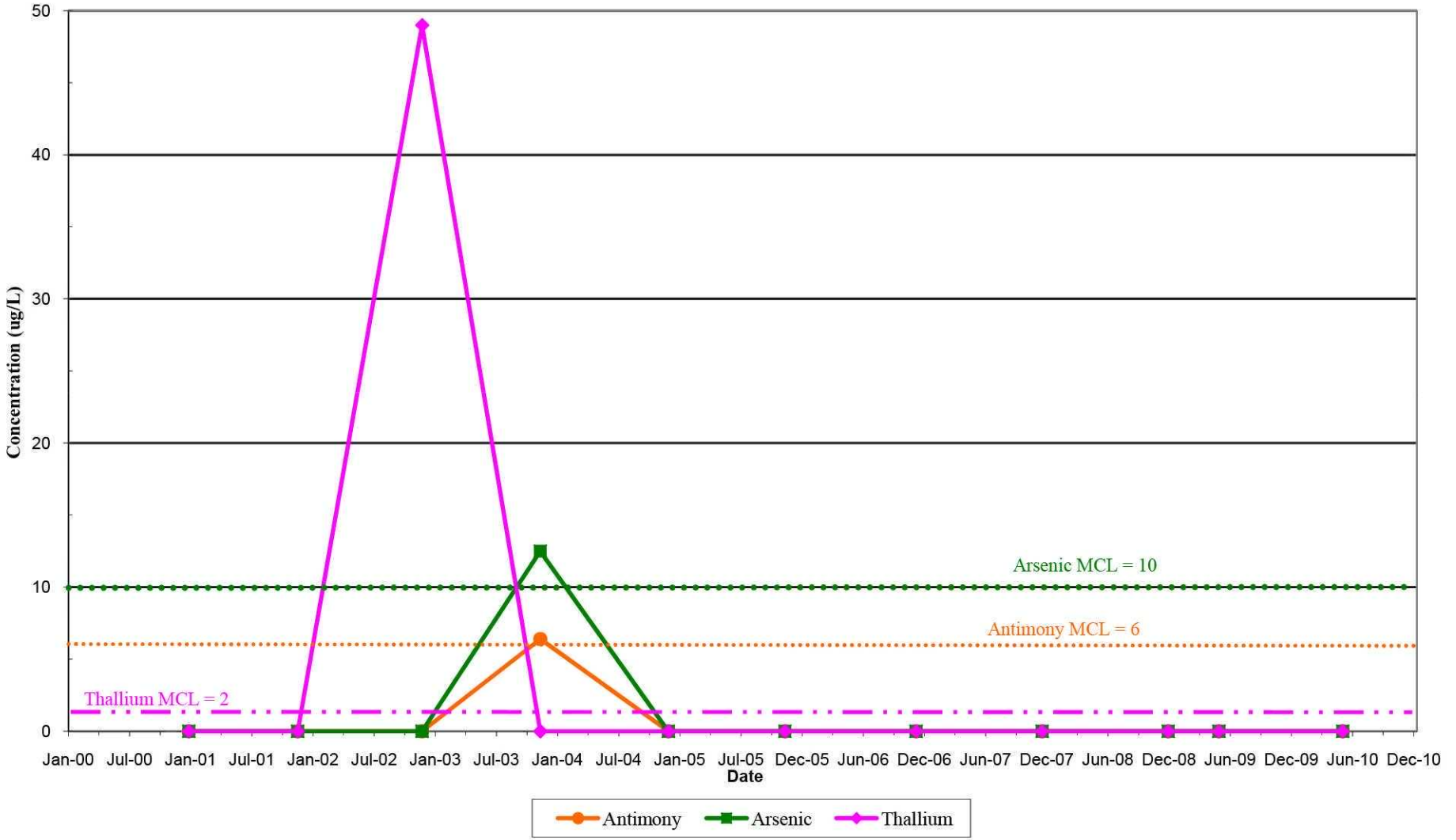
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 23
MW-6
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



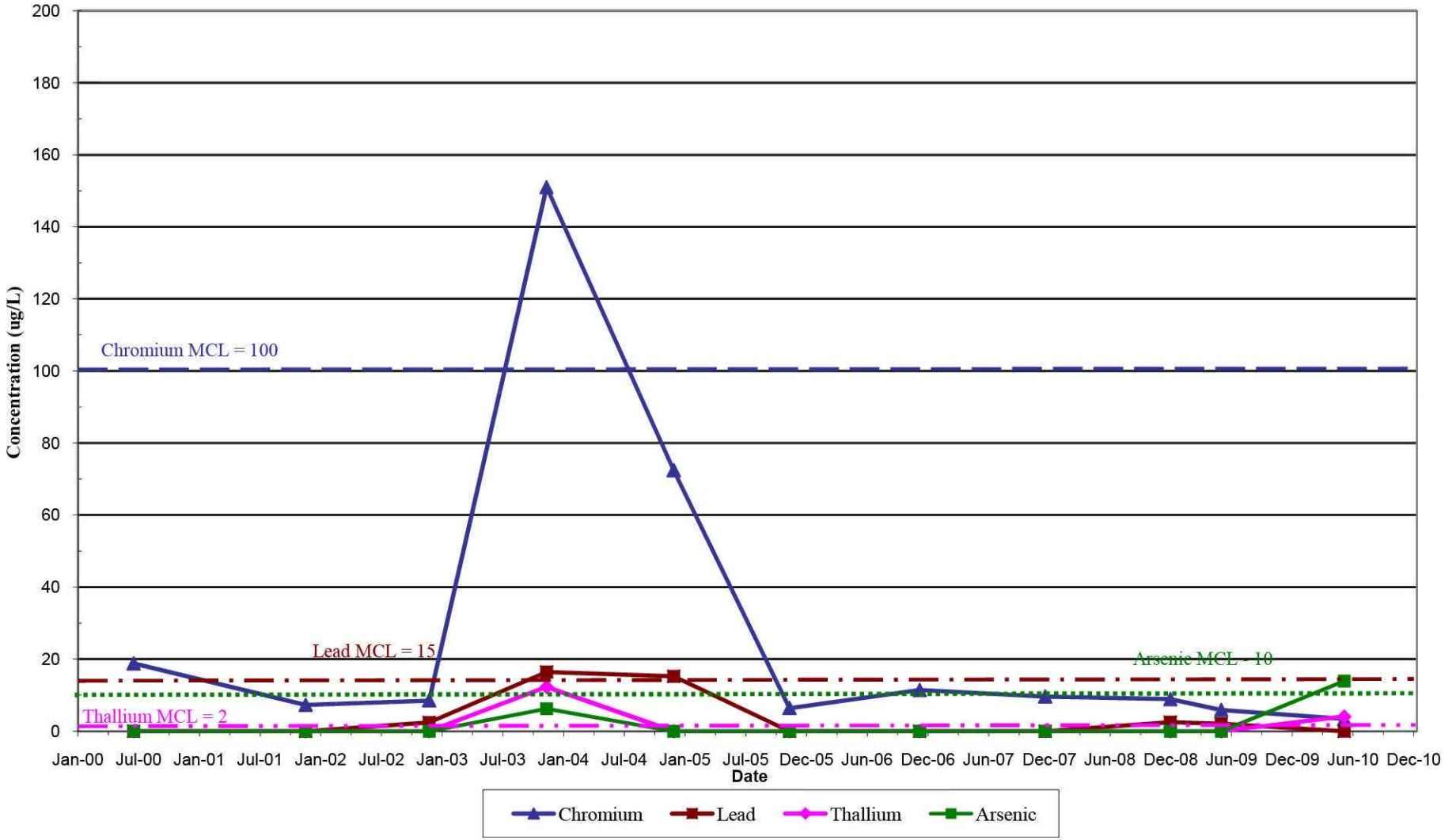
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 24
MW-7
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



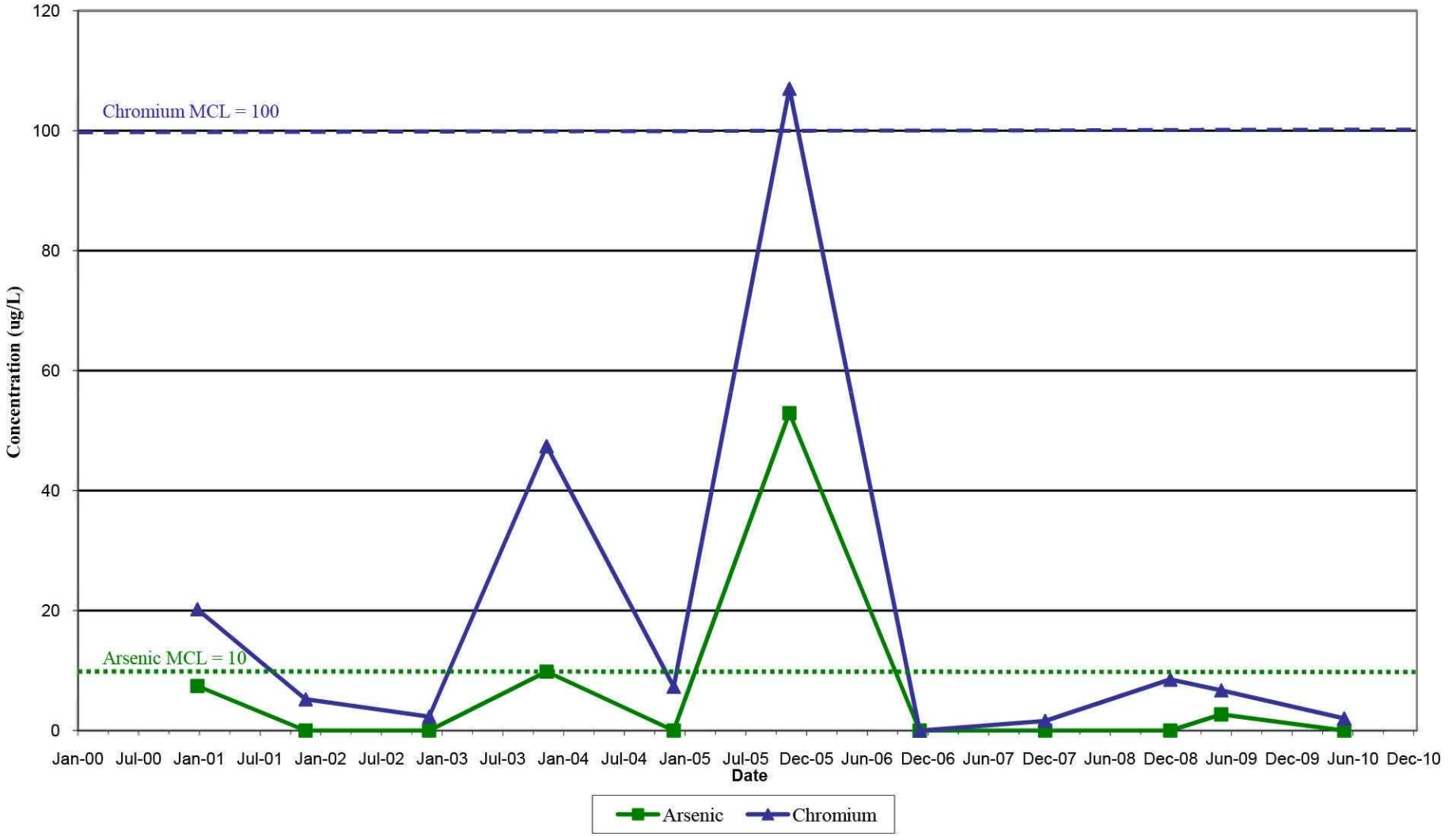
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 25
MW-8
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



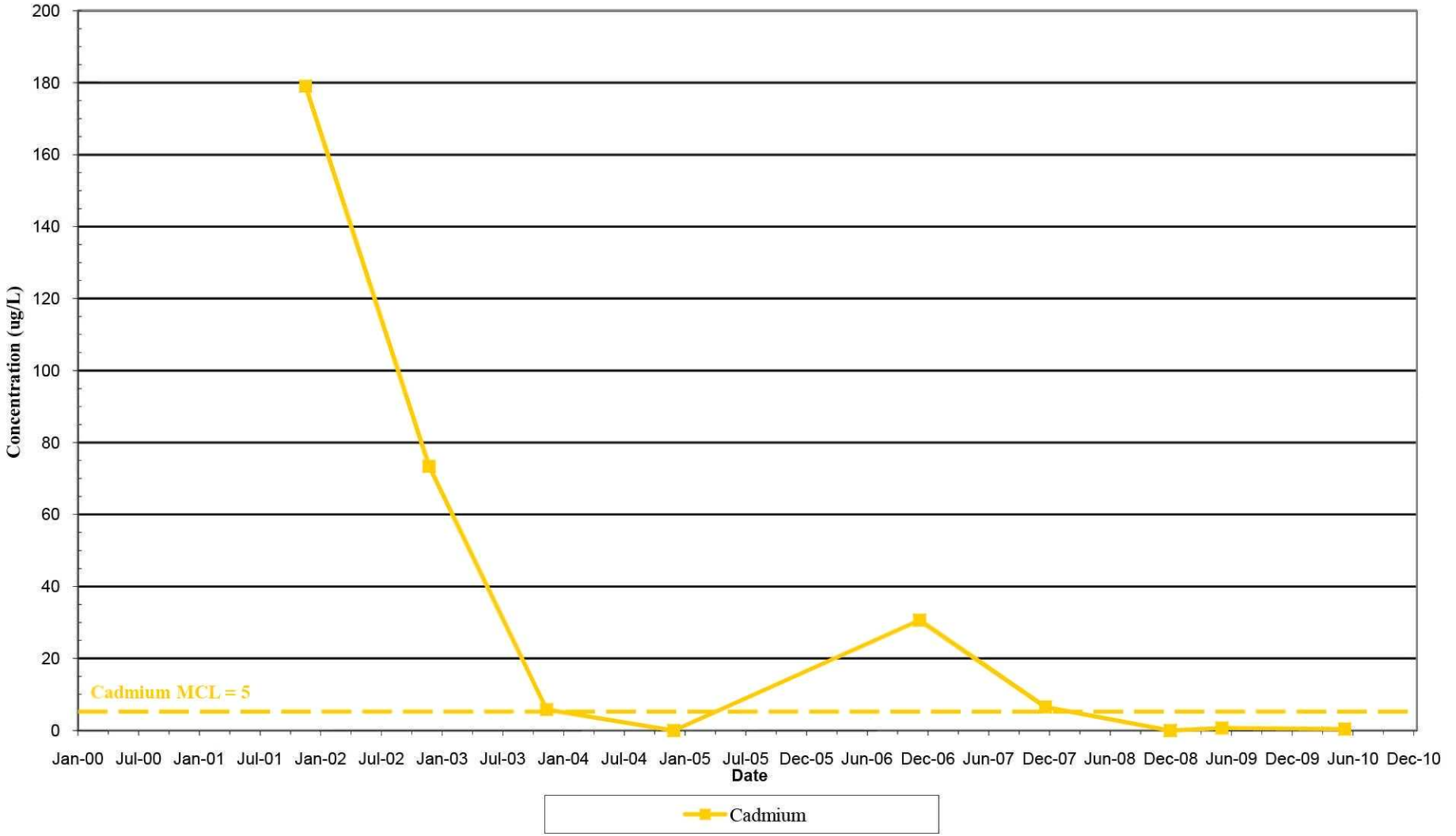
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 26
MW-11
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



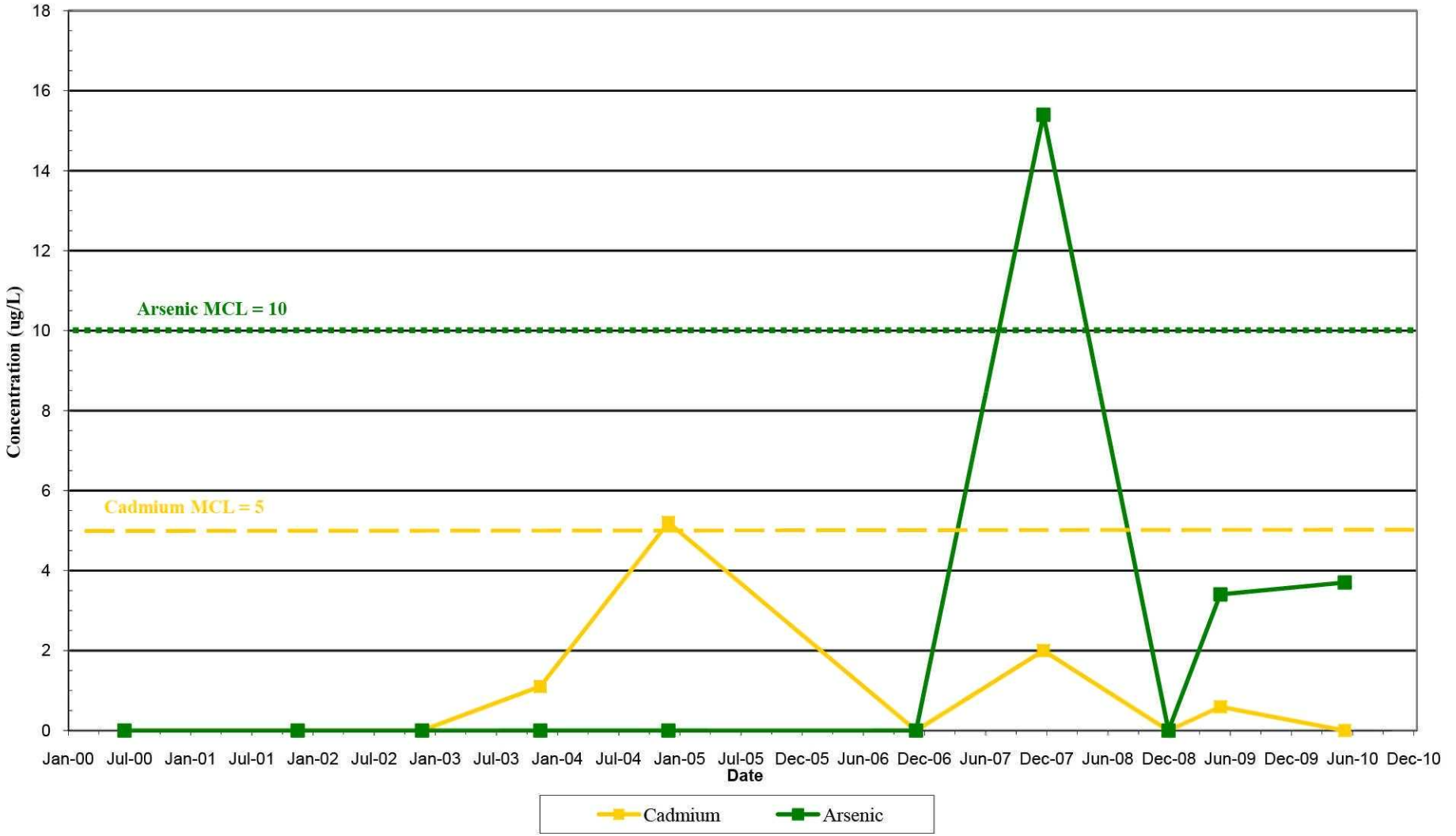
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 27
MW-13
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



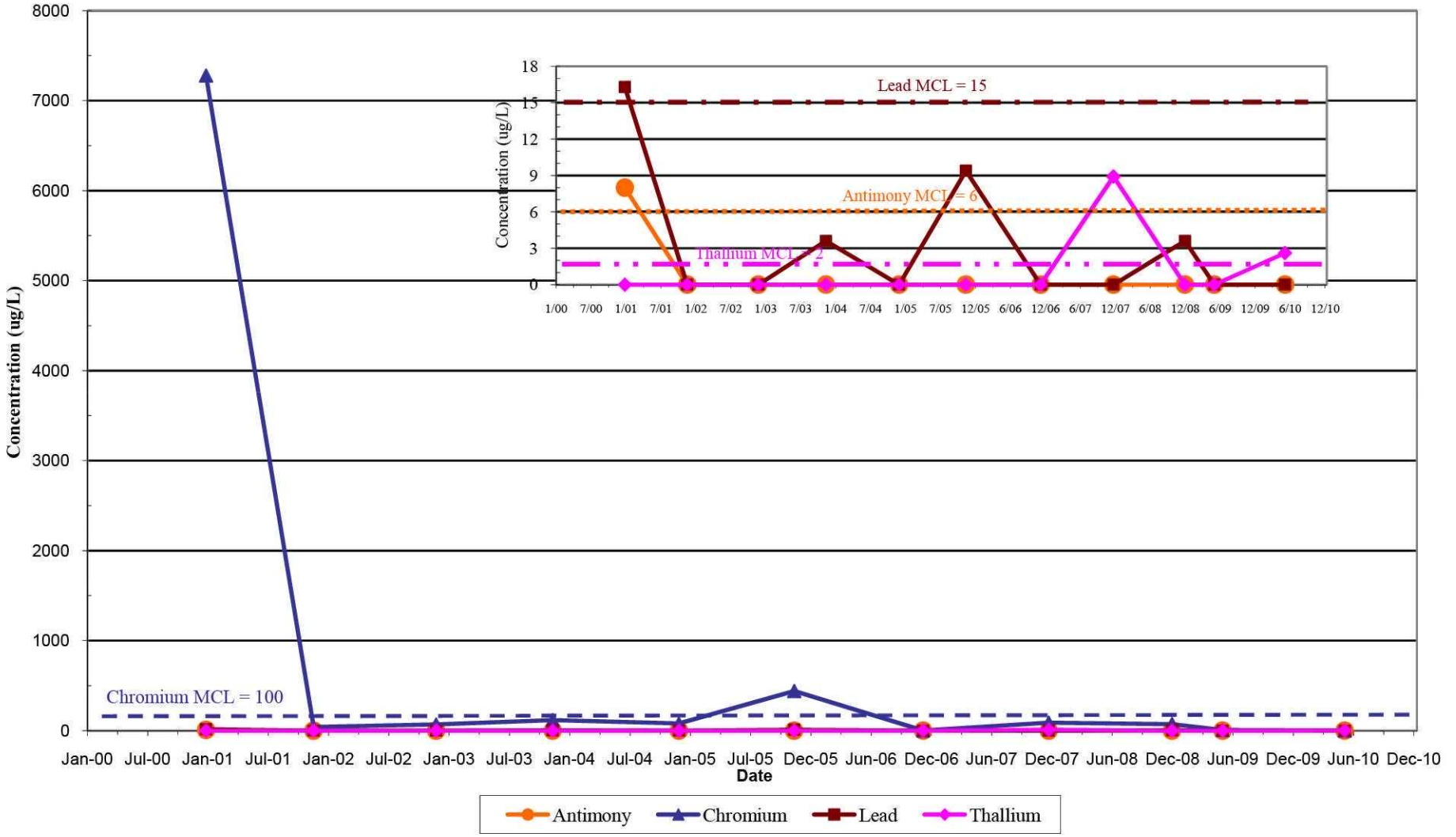
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 28
MW-14
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



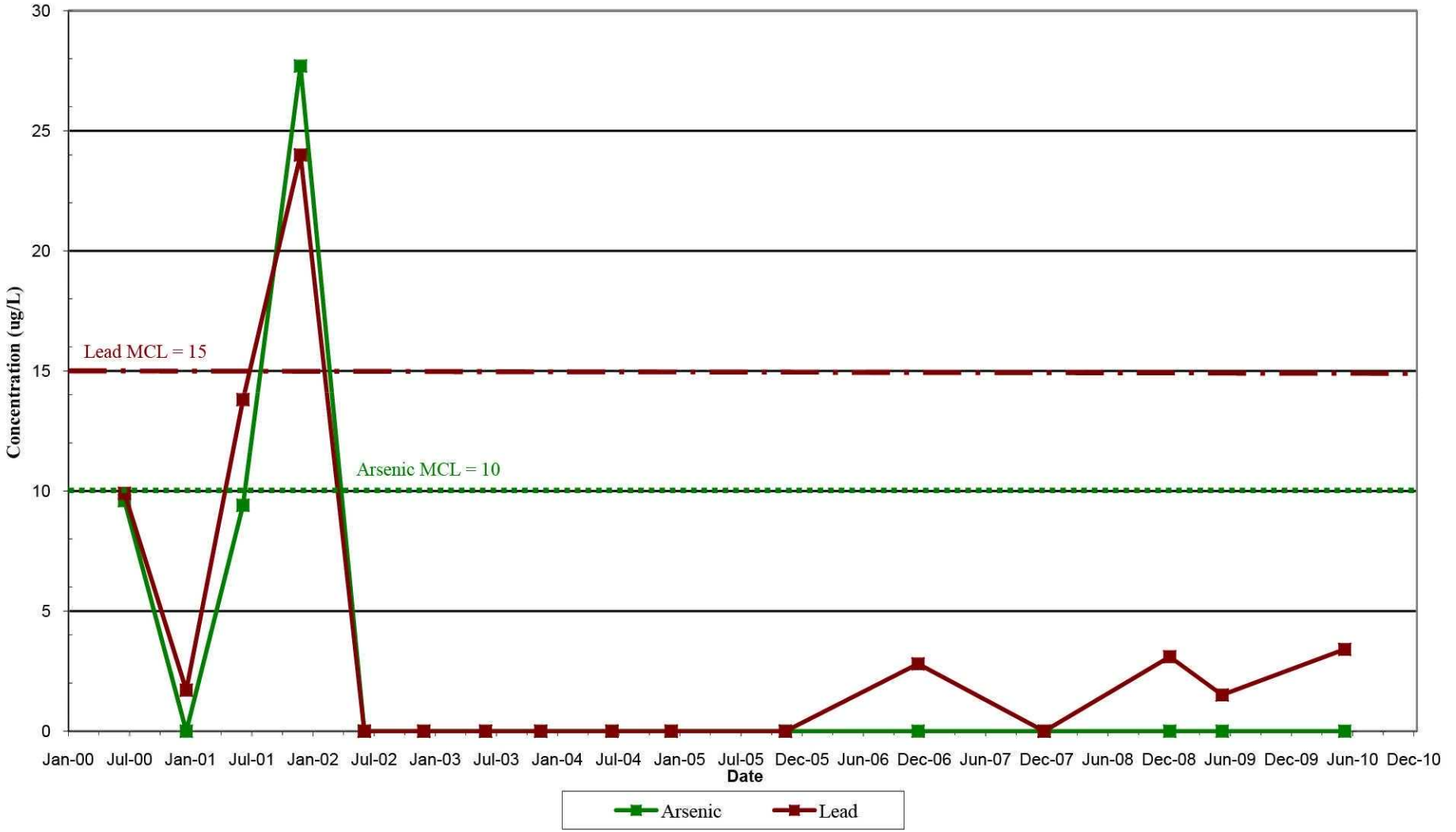
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 29
MW-15
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



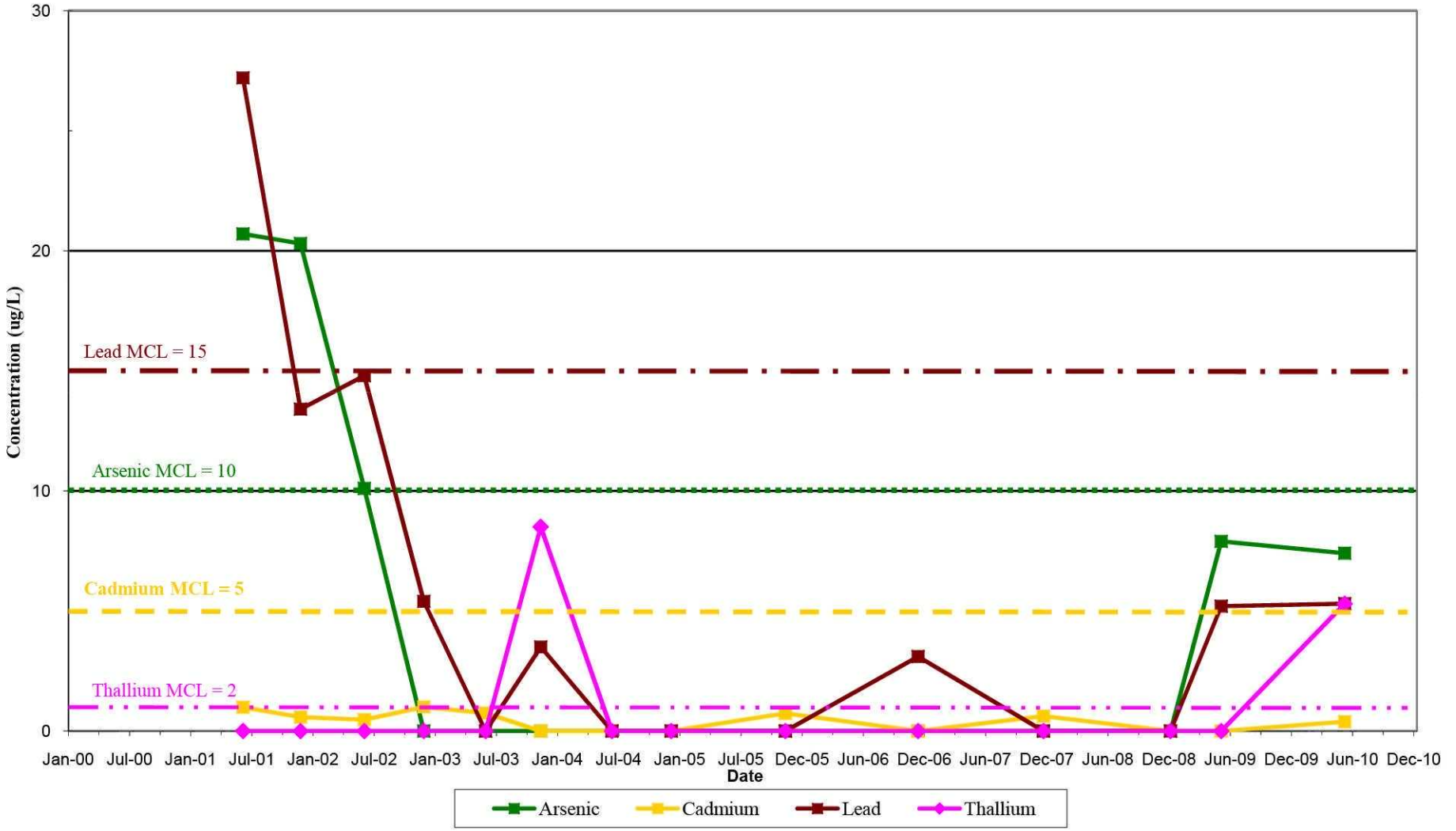
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 30
MW-25
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



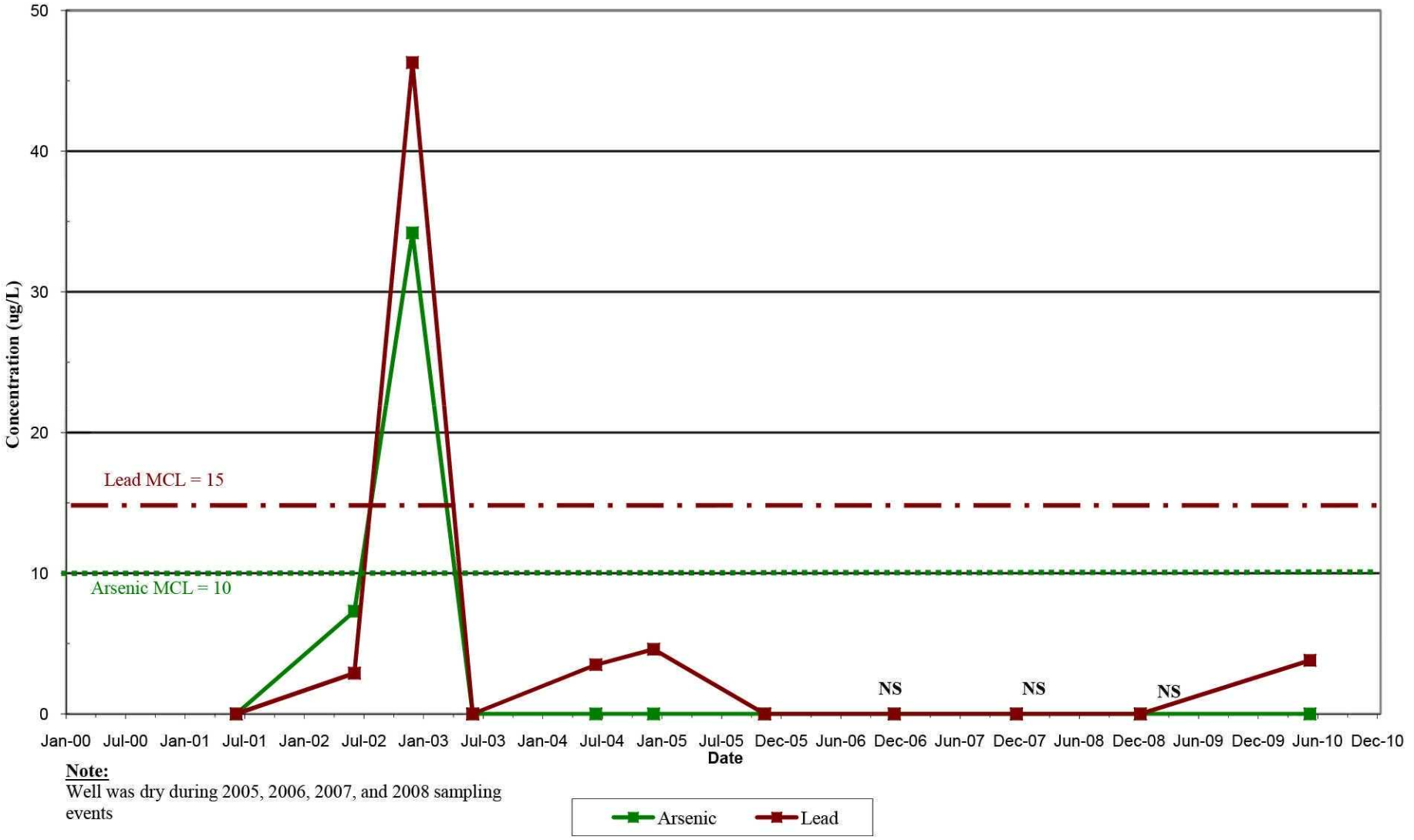
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 31
MW-26
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

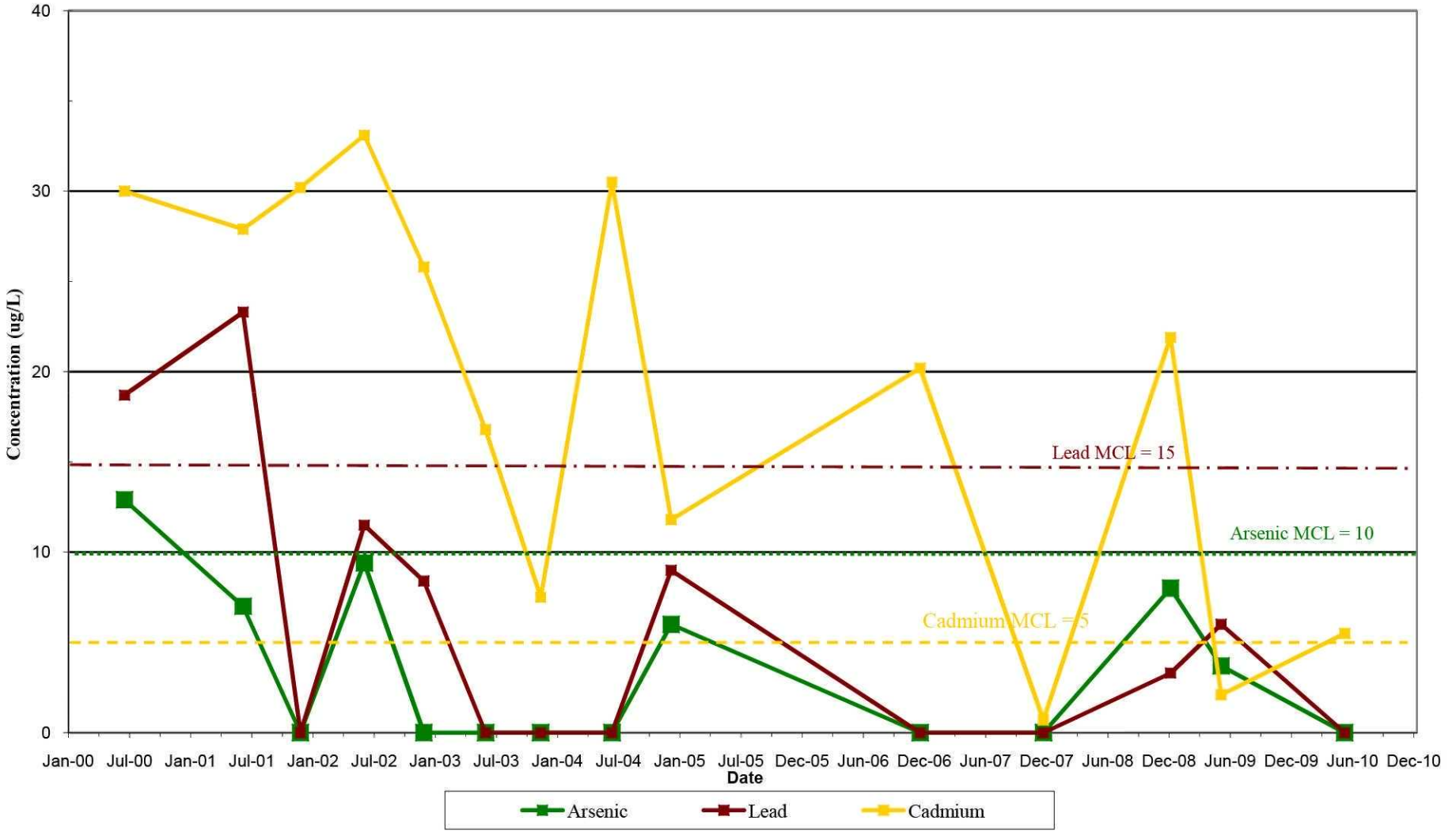
Figure 32
MW-27
Total Metals Over The MCL
2000-2010
Smith's Farm - Sherpherdsville, KY



Note:
Well was dry during 2005, 2006, 2007, and 2008 sampling events

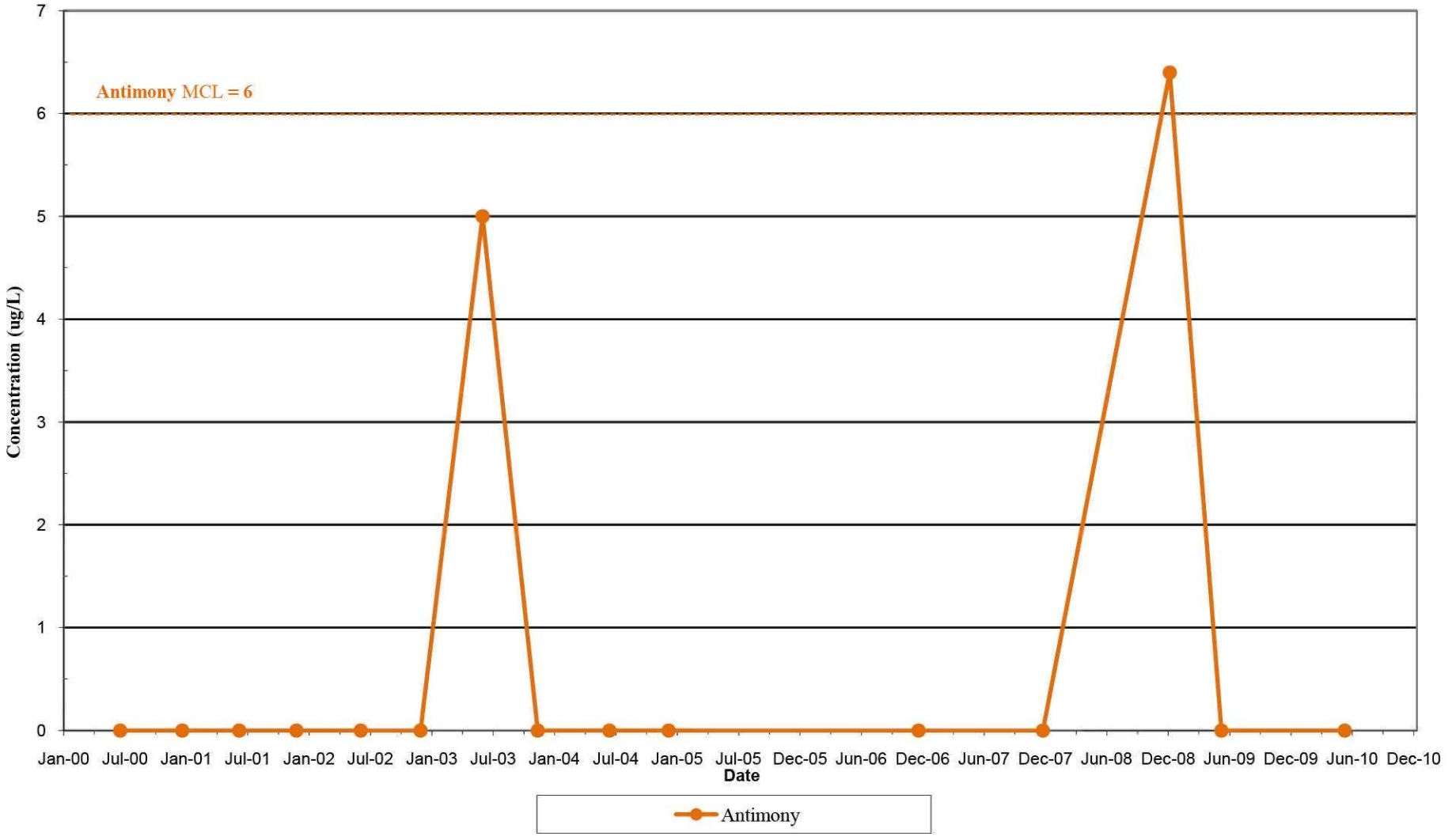
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 33
MW-28
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



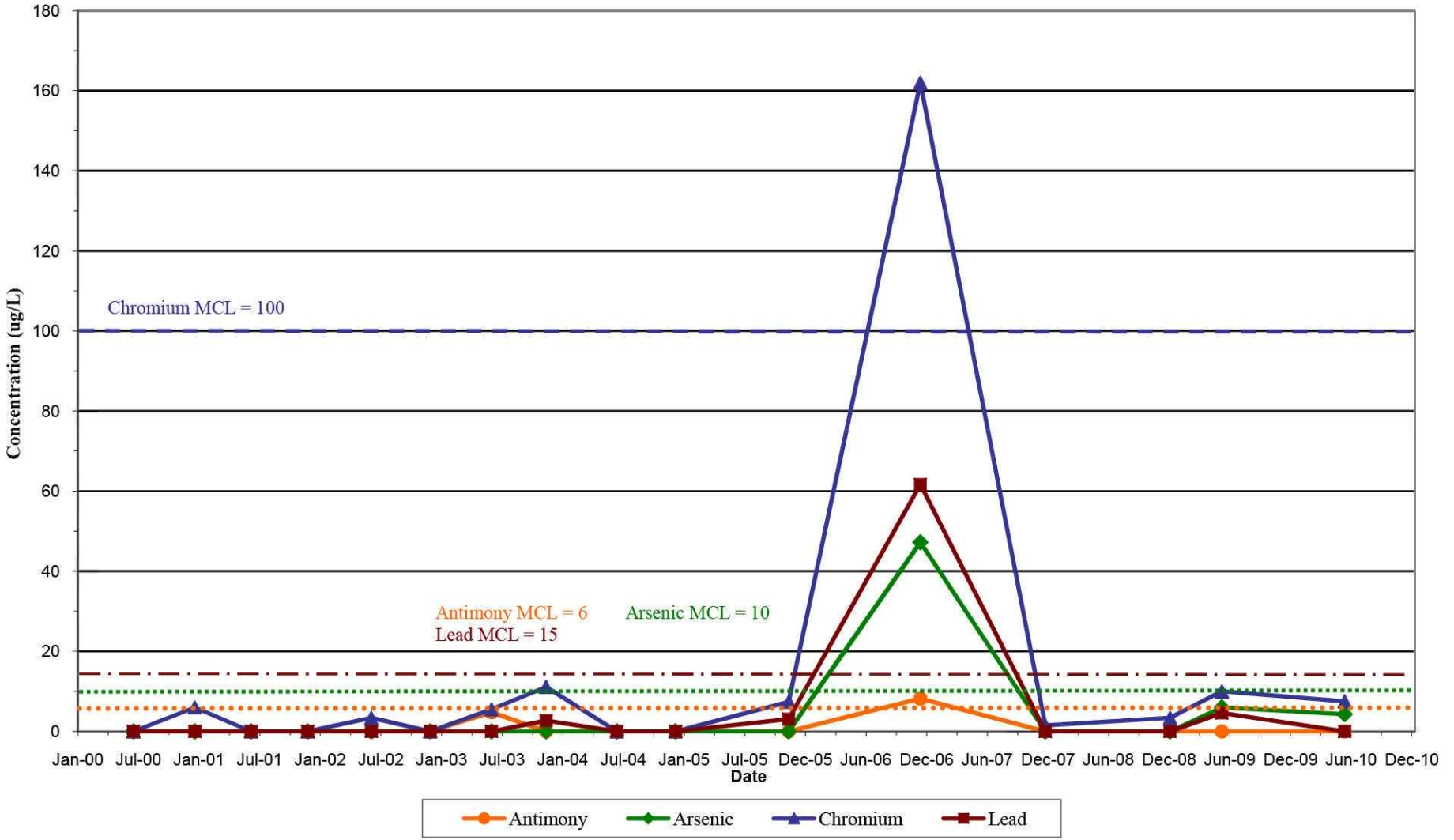
Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 34
MW-29
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Figure 35
MW-30
Total Metals Over The MCL
2000-2010
Smith's Farm - Shepherdsville, KY



Prepared by: RMB 3/15/2011
Checked by: CLC 3/15/2011

Appendix H: Effluent Sampling Results

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/25/2009	6/24/2009	9/21/2009	12/21/2009	3/29/2010	6/23/2010	9/29/2010	12/17/2010	1/19/2011
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
FIELD PARAMETER:											
pH, pH units											
pH	--	--	8.2 J	7.6 J	8.0 J	7.7 J	8.1	7.6	6.7	7.5 J	NA
Turbidity, NTU											
Turbidity	--	--	0.69	0.28 JB	0.50	0.97 J	0.47	0.75	1.5	0.44 JB	NA
FIXED BASE LABORATORY ANALYSIS:											
Ammonia Nitrogen, mg/L											
Nitrogen, ammonia (As N)	--	--	<0.6	<0.6	<0.6	0.24 JQ	0.24 JQ	<0.6	0.62	<0.6	NA
Anions, mg/L											
Nitrogen, nitrate	--	--	1.8	0.52	1.0	0.60 J	0.86	0.84	0.64	0.66	NA
Nitrogen, nitrite	--	--	<0.5	<0.5	<0.5	<0.5	<10	<0.5	<0.5	<0.5	NA
Biochemical Oxygen Demand (BOD), mg/L											
Biochemical Oxygen Demand (BOD)	--	--	< 4.6	< 0.84	< 1.4	< 1.9	<4.3	<2	<2.2	<2.1	NA
Chemical Oxygen Demand (COD), mg/L											
Chemical Oxygen Demand (COD)	--	--	33.5 JQ	50.0	46.6 JQ	45.8 JQ	42.8 JQ	47.6 JQ	57.8	37.3 JQ	NA
Cyanide, Total, mg/L											
Cyanide	--	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NA
Hexavalent Chromium, Total, mg/L											
Hexavalent Chromium	--	--	0.0010 JQ	NA	NA	NA	<0.003	0.0013 JQ	0.00083 JQ	0.0018 JQ	NA
Mercury, Total, ng/L											
Mercury	--	12	4.96 JQ	2.45 JQ	3.95 JQ	10.5	6.93 JQ	11.2 JQ	8.7 JQ	**13.1**	8.54
Metals, Total, mg/L											
Antimony	0.062	1.6	0.00079 JQ	0.00060 JQ	0.00075 JQ	< 0.001	0.00042 JQ	0.00055 JQ	0.00067 JQ	0.00056 JQ	NA
Arsenic	0.011	0.05	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	NA
Barium	0.231	--	0.0612	0.0549	0.0524	0.0438	0.0576	0.0634	0.0787	0.0368	NA
Beryllium	--	0.0053	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NA
Cadmium	--	0.0011	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NA
Calcium	--	--	131	128	131	121	146	142	160	80.2	NA
Chromium	0.011	0.011	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	NA
Copper	--	0.012	0.0053 JQ	<0.01	0.0038 JQ	0.0038 JQ	0.0036 JQ	0.0037 JQ	<0.01	0.003 JQ	NA
Iron	--	1	0.0933 JQ	<0.2	<0.2	<0.2	<0.2	0.0557 JQ	<0.2	0.0808 JQ	NA
Lead	--	0.0032	0.00020 JQ	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0001 JQ	NA
Magnesium	--	--	123	118	124	111	143	133	146	63.3	NA
Manganese	--	--	1.18	0.42	0.377	0.0678	0.313	0.179	0.237	0.122	NA
Nickel	--	0.16	0.0129	0.011	0.0126	0.0152	0.0126	0.0123	0.0119	0.0079 JQ	NA
Selenium	--	0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.00066 JQ	0.00037 JQ	NA
Silver	--	0.00012	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.000095 JQ	NA

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/25/2009	6/24/2009	9/21/2009	12/21/2009	3/29/2010	6/23/2010	9/29/2010	12/17/2010	1/19/2011
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
Thallium	0.011	0.04	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	NA
Zinc	--	0.11	0.0123 JQ	<0.02	<0.02	0.0152 JQ	<0.02	<0.02	0.0172 JQ	<0.02	NA
Phenol, mg/L											
Phenol	--	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	NA
Phosphorus, mg/L											
Ortho Phosphorus	--	--	NA	0.26	0.25	0.19 J	0.18	0.23	0.25	0.22	NA
Phosphorus, Total	--	--	< 0.1	0.084 JQ	0.19	0.17 J	0.14	0.11	0.27	0.15	NA
Semi-Volatile Organic Compounds, ug/L											
1,2,4-Trichlorobenzene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
1,2-Dichlorobenzene	--	5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
1,3-Dichlorobenzene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
1,4-Dichlorobenzene	--	5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,2'-oxybis(2-Chloropropane)	--	--	NA	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,4,5-Trichlorophenol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,4,6-Trichlorophenol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,4-Dichlorophenol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,4-Dimethylphenol	4570	5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,4-Dinitrophenol	--	--	< 29	< 29	< 28	< 28	<29	<29	<29	<28	NA
2,4-Dinitrotoluene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,6-Dichlorophenol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2,6-Dinitrotoluene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2-Chloronaphthalene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2-Chlorophenol	23	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2-Methylnaphthalene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2-Methylphenol (o-Cresol)	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2-Nitroaniline	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
2-Nitrophenol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
3,3'-Dichlorobenzidine	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
3-Nitroaniline	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
4,6-Dinitro-2-Methylphenol	--	--	< 14	< 14	< 14	< 14	<14	<14	<14	<14	NA
4-Bromophenyl phenyl ether	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
4-Chloro-3-Methylphenol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
4-Chloroaniline	--	--	< 5	< 5	< 5	< 5 UJ	<5	<5	<5	<5	NA
4-Chlorophenyl phenyl ether	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
4-Methylphenol (p-Cresol)	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
4-Nitroaniline	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
4-Nitrophenol	--	--	< 10	< 10	< 9	< 9	<10	<10	<10	<9	NA
Acenaphthene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Acenaphthylene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
alpha-Terpineol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Aniline	--	--	< 5	< 5	< 5	< 5 UJ	<5	<5	<5	<5	NA
Anthracene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Benzidine	--	--	< 57 UJ	< 57	< 57	< 57 UJ	<58	<57	<57	<57	NA

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/25/2009	6/24/2009	9/21/2009	12/21/2009	3/29/2010	6/23/2010	9/29/2010	12/17/2010	1/19/2011
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
Benzo(a)anthracene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Benzo(a)pyrene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Benzo(b)fluoranthene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Benzo(g,h,i)perylene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Benzo(k)fluoranthene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Benzoic acid	--	--	< 29	< 29 R	< 28 R	< 28	<29	<29	<29	<28	NA
Benzyl Alcohol	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
bis(2-Chloroethoxy)methane	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
bis(2-Chloroethyl)ether	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
bis(2-Ethylhexyl)phthalate	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Butyl benzyl phthalate	--	5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Carbazole	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Chrysene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Dibenzo(a,h)anthracene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Dibenzofuran	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Diethyl Phthalate	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Dimethyl phthalate	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Di-n-butyl phthalate	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Di-n-octyl phthalate	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Fluoranthene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Fluorene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Hexachlorobenzene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Hexachlorobutadiene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Hexachlorocyclopentadiene	--	--	< 14	< 14	< 14	< 14	<14	<14	<14	<14	NA
Hexachloroethane	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Indeno(1,2,3-cd)pyrene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Isophorone	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Naphthalene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Nitrobenzene	250	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
N-Nitrosodimethylamine	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
N-Nitrosodi-n-propylamine	11	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
N-Nitrosodiphenylamine	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Pentachlorophenol	--	--	< 14	< 14	< 14	< 14	<14	<14	<14	<14	NA
Phenanthrene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Phenol	365000	5	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Pyrene	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Pyridine	--	--	< 5	< 5	< 5	< 5	<5	<5	<5	<5	NA
Total Dissolved Solids (TDS), mg/L											
Total Dissolved Solids	--	--	1620	1550	1680	1550	1840	1700	1610	908	NA
Total Kjeldahl Nitrogen, mg/L											
Total Kjeldahl Nitrogen	--	--	1.1	0.80 JQ	< 1.0	0.90 JQ	0.68 JQ	0.85 JQ	1.5	0.58 JQ	NA
Total Organic Carbon (TOC), mg/L											
Total Organic Carbon (TOC)	--	--	13.6	12.9	14.2	15.3	13.2	14.6	17.5	9.1	NA

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/25/2009	6/24/2009	9/21/2009	12/21/2009	3/29/2010	6/23/2010	9/29/2010	12/17/2010	1/19/2011
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
Total Suspended Solids (TSS), mg/L											
Total Suspended Solids	--	--	<12	<12	<12	<12	<12	<12	<12	3.2 JQ	NA
Volatile Organic Compounds, ug/L											
1,1,1,2-Tetrachloroethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,1,1-Trichloroethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,1,2,2-Tetrachloroethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,1,2-Trichloroethane	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,1-Dichloroethane	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,1-Dichloroethene	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,1-Dichloropropene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2,3-Trichlorobenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2,3-Trichloropropane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2,4-Trichlorobenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2,4-Trimethylbenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2-Dibromo-3-Chloropropane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2-Dibromoethane (Ethylene dibromide)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2-Dichlorobenzene	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2-Dichloroethane	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,2-Dichloropropane	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,3,5-Trimethylbenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,3-Dichlorobenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,3-Dichloropropane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
1,4-Dichlorobenzene	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
2,2-Dichloropropane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
2-Butanone (Methyl ethyl ketone)	--	--	< 10	< 10 UJ	< 10	< 10	<10	<10	<10	<10	NA
2-Chloroethyl vinyl ether	--	--	< 10 UJ	< 10 UJ	< 10	< 10 UJ	<10	<10	<10	<10	NA
2-Chlorotoluene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
2-Hexanone	--	--	< 10	< 10 UJ	< 10	< 10	<10	<10	<10	<10	NA
4-Chlorotoluene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
4-Isopropyltoluene (Cymene)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Acetone	--	--	< 20	< 20 UJ	< 20	< 20	<20	<20	<20	<20	NA
Acrolein	--	--	< 50	< 50 UJ	< 50	< 50	<50	<50	<50	<50	NA
Acrylonitrile	--	--	< 50	< 50 UJ	< 50	< 50	<50	<50	<50	<50	NA
Benzene	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Bromobenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Bromodichloromethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Bromoform (Tribromomethane)	--	--	< 5	< 5 UJ	< 5	1 JQ	<5	<5	<5	<5	NA
Bromomethane (Methyl bromide)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Carbon disulfide	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Carbon tetrachloride	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Chlorobenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Chlorodibromomethane (Dibromochloromethane)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Chloroethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Chloroform	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/25/2009	6/24/2009	9/21/2009	12/21/2009	3/29/2010	6/23/2010	9/29/2010	12/17/2010	1/19/2011
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample
Chloromethane (Methyl chloride)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
cis-1,2-Dichloroethene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
cis-1,3-Dichloropropene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Dibromomethane (Methylene bromide)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Dichlorodifluoromethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Ethylbenzene	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Hexachlorobutadiene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Iodomethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Isopropylbenzene (Cumene)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
m,p-Xylenes	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Methyl isobutyl ketone (4-Methyl-2-pentanone)	--	--	< 10	< 10 UJ	< 10	< 10	<10	<10	<10	<10	NA
Methylene chloride (Dichloromethane)	5870	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Naphthalene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
n-Butylbenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
n-Propylbenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
o-Xylene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
sec-Butylbenzene (2-Phenylbutane)	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Styrene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
tert-Butylbenzene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Tetrachloroethene (PCE)	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Toluene	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
trans-1,2-Dichloroethene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
trans-1,3-Dichloropropene	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
trans-1,4-Dichlorobutene	--	--	< 50	< 50 UJ	< 50	< 50	<50	<50	<50	<50	NA
Trichloroethene (TCE)	--	5	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Trichlorofluoromethane	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA
Vinyl Acetate	--	--	< 10	< 10 UJ	< 10	< 10	<10	<10	<10	<10	NA
Vinyl Chloride	--	--	< 5	< 5 UJ	< 5	< 5	<5	<5	<5	<5	NA

Notes:

Analytical methods vary per sampling event and are listed below:
pH - EPA 150.1, SM 4500HB
Temperature - EPA 170.1, SM 2550B
Turbidity - EPA 180.1
Ammonia Nitrogen - EPA 350.1, SM 4500NH3 B/CM
Anions - EPA 300.0, EPA 353.3, EPA 354.1
Biological Oxygen Demand (BOD) - EPA 405.1, SM 5210B
Chemical Oxygen Demand (COD) - EPA 410.1, EPA 410.4, SM 5220D
Cyanide - EPA 335.4
Mercury - EPA 200.7, EPA 245.1, EPA 1631 Low Level
Phenol - EPA 420.4
Phosphorus - EPA 300.0, EPA 365.1, SM4500P
Semi-Volatile Organic Compounds - EPA 625, SW846 8270C
Total Dissolved Solids (TDS) - EPA 160.1, 1-1750-85, SM2540C
Total Kjeldahl Nitrogen - EPA 351.2, EPA 351.3, SM 4500
Total Metals - EPA 200.7, EPA 200.8

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/25/2009	6/24/2009	9/21/2009	12/21/2009	3/29/2010	6/23/2010	9/29/2010	12/17/2010	1/19/2011
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample	Sample

Total Organic Carbon (TOC) - SM 5310B, SM 5310C, SW846 9060
Total Suspended Solids (TSS) - EPA 160.2, I-3765-85, SM2540D
Volatile Organic Compounds - EPA 624, SW846 8260B
-- = Regulatory requirement not established for this constituent
BOLD = Exceeded regulatory requirement

Data Flag Definitions:
J = Estimated value based on QC data
JB = Estimated value due to blank contamination
JQ = Estimated value; reported between the CRDL and MDL
NA = Not Analyzed
R = The data are rejected due to deficiences in meeting QC criteria and nay not be used for decision making
UJ = Undetected; the reported detection limit is approximate
< = Less than the Reporting Limit

Prepared by/Date: RMB 3/2/11
Checked by/Date: CLC 3/2/11

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008	3/25/2009	6/24/2009	9/21/2009	12/21/2009
Sample Type:	Requirements	Requirements	Sample	Sample	Duplicate	Sample	Sample	Sample	Sample	Sample	Sample
FIXED BASE LABORATORY ANALYSIS:											
pH, pH units											
pH	--	--	7.7	NA	NA	NA	7.9	8.2 J	7.6 J	8.0 J	7.7 J
Turbidity, NTU											
Turbidity	--	--	0.43	NA	NA	NA	0.44 JH	0.69	0.28 JB	0.50	0.97 J
Ammonia Nitrogen, mg/L											
Nitrogen, ammonia (As N)	--	--	0.86	NA	NA	NA	0.27 JQ	< 0.60	< 0.60	< 0.60	0.24 JQ
Anions, mg/L											
Nitrogen, nitrate	--	--	0.82	NA	NA	NA	NA	1.8	0.52	1.0	0.60 J
Nitrogen, nitrite	--	--	< 0.50	NA	NA	NA	NA	< 0.50	< 0.50	< 0.50	< 0.50
Biochemical Oxygen Demand (BOD), mg/L											
Biochemical Oxygen Demand (BOD)	--	--	< 2.4	< 3.6	< 3.5	< 3.6	< 3.6	< 4.6	< 0.84	< 1.4	< 1.9
Chemical Oxygen Demand (COD), mg/L											
Chemical Oxygen Demand (COD)	--	--	< 50.0	48.7 JQ	48.7 JQ	64.6	60.1	33.5 JQ	50.0	46.6 JQ	45.8 JQ
Cyanide, Total, mg/L											
Cyanide	--	0.005	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Hexavalent Chromium, Total, mg/L											
Hexavalent Chromium	--	--	< 0.0030	NA	NA	NA	NA	0.0010 JQ	NA	NA	NA
Mercury, Total, ng/L											
Mercury	--	12	3.96	2.66 JQ	2.96 JQ	7.60	1.37	4.96 JQ	2.45 JQ	3.95 JQ	10.5
Metals, Total, mg/L											
Antimony	0.062	1.6	< 0.0010	0.00063 JQ	0.00061 JQ	0.00087 JQ	0.00073 JQ	0.00079 JQ	0.00060 JQ	0.00075 JQ	< 0.0010
Arsenic	0.011	0.05	< 0.0020	0.0019 JQ	0.0023	< 0.0020	0.0011 JQ	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Barium	0.231	--	0.0567	0.0465	0.0553	0.0624	0.0558	0.0612	0.0549	0.0524	0.0438
Beryllium	--	0.0053	< 0.00020	0.00026 JQ	0.00029 JQ	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cadmium	--	0.0011	< 0.00025	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Calcium	--	--	137	115	127	142	124	131	128	131	121
Chromium	0.011	0.011	< 0.0150	0.0048 JQ	0.0044 JQ	0.0047 JQ	0.0040 JQ	< 0.0150	< 0.0150	< 0.0150	< 0.0150
Copper	--	0.012	< 0.0100	< 0.0100	< 0.0100	< 0.0100	< 0.0100	0.0053 JQ	< 0.0100	0.0038 JQ	0.0038 JQ
Iron	--	1	< 0.200	< 0.200	< 0.200	0.116 JQ	0.0605 JQ	0.0933 JQ	< 0.200	< 0.200	< 0.200
Lead	--	0.0032	< 0.0010	0.00010 JQ	0.000086 JQ	0.00016 JQ	0.000060 JQ	0.00020 JQ	< 0.0010	< 0.0010	< 0.0010
Magnesium	--	--	126	111	120	143	117	123	118	124	111
Manganese	--	--	0.410	0.287 J	0.680 J	0.968	1.14	1.18	0.420	0.377	0.0678
Nickel	--	0.16	0.0151	0.0191	0.0227	0.0304	0.0243	0.0129	0.0110	0.0126	0.0152
Selenium	--	0.005	0.0031	0.0061 JQ	0.0064 JQ	0.00031 JQ	0.00033 JQ	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Silver	--	0.00012	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Thallium	0.011	0.04	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date	ROD	KPDES	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008	3/25/2009	6/24/2009	9/21/2009	12/21/2009
Sample Type	Requirements	Requirements	Sample	Sample	Duplicate	Sample	Sample	Sample	Sample	Sample	Sample
Zinc	--	0.11	< 0.0200	< 0.0200	< 0.0200	0.0148 JQ	< 0.0200	0.0123 JQ	< 0.0200	< 0.0200	0.0152 JQ
Phenol, mg/L											
Phenol	--	--	< 0.040	NA	NA	NA	NA	< 0.040	< 0.040	< 0.040	< 0.040
Phosphorus, mg/L											
Ortho Phosphorus	--	--	0.071	NA	NA	NA	NA	NA	0.26	0.25	0.19 J
Phosphorus, Total	--	--	< 0.10	NA	NA	NA	< 0.10	< 0.10	0.084 JQ	0.19	0.17 J
Semi-Volatile Organic Compounds, ug/L											
1,2,4-Trichlorobenzene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichlorobenzene	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,3-Dichlorobenzene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,4-Dichlorobenzene	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,2'-oxybis(2-Chloropropane)	--	--	NA	NA	NA	NA	NA	NA	< 5	< 5	< 5
2,4,5-Trichlorophenol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,4,6-Trichlorophenol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,4-Dichlorophenol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,4-Dimethylphenol	4870	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,4-Dinitrophenol	--	--	< 28	< 29	< 29	< 29	< 28	< 29	< 29	< 28	< 28
2,4-Dinitrotoluene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,6-Dichlorophenol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2,6-Dinitrotoluene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Chloronaphthalene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Chlorophenol	23	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Methylnaphthalene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Nitroaniline	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Nitrophenol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
3,3'-Dichlorobenzidine	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
3-Nitroaniline	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5	< 5	< 5
4,6-Dinitro-2-Methylphenol	--	--	< 14	< 14	< 14	< 14	< 14	< 14	< 14	< 14	< 14
4-Bromophenyl phenyl ether	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Chloro-3-Methylphenol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Chloroaniline	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ
4-Chlorophenyl phenyl ether	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Methylphenol (p-Cresol)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Nitroaniline	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
4-Nitrophenol	--	--	< 9	< 10	< 10	< 10	< 9	< 10	< 10	< 9	< 9
Acenaphthene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Acenaphthylene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
alpha-Terpineol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Aniline	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ
Anthracene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzidine	--	--	< 57	< 58	< 57	< 57	< 57	< 57 UJ	< 57	< 57	< 57 UJ
Benzo(a)anthracene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date: / Sample Type:	ROD Requirements	KPDES Requirements	Effluent 3/3/2008 Sample	Effluent 6/30/2008 Sample	Effluent 6/30/2008 Duplicate	Effluent 9/29/2008 Sample	Effluent 12/17/2008 Sample	Effluent 3/25/2009 Sample	Effluent 6/24/2009 Sample	Effluent 9/21/2009 Sample	Effluent 12/21/2009 Sample
Benzo(a)pyrene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzo(b)fluoranthene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzo(g,h,i)perylene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzo(k)fluoranthene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Benzoic acid	--	--	< 28	< 29	< 29	< 29	< 28	< 29	< 29 R	< 28 R	< 28
Benzyl Alcohol	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
bis(2-Chloroethoxy)methane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
bis(2-Chloroethyl)ether	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
bis(2-Chloroisopropyl)ether	--	--	< 5	< 5	< 5	< 5	< 5	< 5	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Butyl benzyl phthalate	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbazole	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chrysene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibenzo(a,h)anthracene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibenzofuran	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Diethyl Phthalate	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dimethyl phthalate	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Di-n-butyl phthalate	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Di-n-octyl phthalate	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Fluoranthene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Fluorene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Hexachlorobenzene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Hexachlorobutadiene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Hexachlorocyclopentadiene	--	--	< 14	< 14	< 14	< 14	< 14	< 14	< 14	< 14	< 14
Hexachloroethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Indeno(1,2,3-cd)pyrene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Isophorone	--	--	< 5	0.4 JQ	< 5	0.3 JQ	< 5	< 5	< 5	< 5	< 5
Naphthalene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Nitrobenzene	250	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
N-Nitrosodimethylamine	--	--	< 5	< 5	< 5	0.5 JQ	< 5	< 5	< 5	< 5	< 5
N-Nitrosodi-n-propylamine	11	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
N-Nitrosodiphenylamine	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Pentachlorophenol	--	--	< 14	< 14	< 14	< 14	< 14	< 14	< 14	< 14	< 14
Phenanthrene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Phenol	365000	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Pyrene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Pyridine	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Total Dissolved Solids (TDS), mg/L											
Total Dissolved Solids	--	--	1560	NA	NA	NA	1440	1620	1550	1680	1550
Total Kjeldahl Nitrogen, mg/L											
Total Kjeldahl Nitrogen	--	--	1.1	NA	NA	NA	1.3	1.1	0.80 JQ	< 1.0	0.90 JQ
Total Organic Carbon (TOC), mg/L											
Total Organic Carbon (TOC)	--	--	11.7	15.3	15.1	20.4	17.7	13.6	12.9	14.2	15.3

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008	3/25/2009	6/24/2009	9/21/2009	12/21/2009
Sample Type:	Requirements	Requirements	Sample	Sample	Duplicate	Sample	Sample	Sample	Sample	Sample	Sample
Total Suspended Solids (TSS), mg/L											
Total Suspended Solids	--	--	< 12.0	NA	NA	NA	< 20.0	< 12.0	< 12.0	< 12.0	< 12.0
Volatile Organic Compounds, ug/L											
1,1,1,2-Tetrachloroethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,1,1-Trichloroethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,1,2,2-Tetrachloroethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,1,2-Trichloroethane	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,1-Dichloroethane	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,1-Dichloroethene	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,1-Dichloropropene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,2,3-Trichlorobenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
1,2,3-Trichloropropane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,2,4-Trichlorobenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
1,2,4-Trimethylbenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
1,2-Dibromo-3-Chloropropane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,2-Dibromoethane (Ethylene dibromide)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,2-Dichlorobenzene	--	5	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
1,2-Dichloroethane	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,2-Dichloropropane	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,3,5-Trimethylbenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
1,3-Dichlorobenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
1,3-Dichloropropane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
1,4-Dichlorobenzene	--	5	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
2,2-Dichloropropane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
2-Butanone (Methyl ethyl ketone)	--	--	< 10	< 10	< 10	< 10	< 10	< 10	< 10 UJ	< 10	< 10
2-Chloroethyl vinyl ether	--	--	< 10	< 10 UJ	< 10 UJ	< 10	< 10	< 10 UJ	< 10 UJ	< 10	< 10 UJ
2-Chlorotoluene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
2-Hexanone	--	--	< 10	< 10	< 10	< 10	< 10	< 10	< 10 UJ	< 10	< 10
4-Chlorotoluene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
4-Isopropyltoluene (Cymene)	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
Acetone	--	--	< 20	< 20	< 20	< 20	< 20	< 20	< 20 UJ	< 20	< 20
Acrolein	--	--	< 50	< 50	< 50	< 50	< 50	< 50	< 50 UJ	< 50	< 50
Acrylonitrile	--	--	< 50	< 50	< 50	< 50	< 50	< 50	< 50 UJ	< 50	< 50
Benzene	--	5	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
Bromobenzene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Bromodichloromethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Bromoform (Tribromomethane)	--	--	< 5	< 5	< 5	< 5	1 JQ	< 5	< 5 UJ	< 5	1 JQ
Bromomethane (Methyl bromide)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Carbon disulfide	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Carbon tetrachloride	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Chlorobenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
Chlorodibromomethane (Dibromochloromethane)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Chloroethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Chloroform	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008	3/25/2009	6/24/2009	9/21/2009	12/21/2009
Sample Type:	Requirements	Requirements	Sample	Sample	Duplicate	Sample	Sample	Sample	Sample	Sample	Sample
Chloromethane (Methyl chloride)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
cis-1,2-Dichloroethene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
cis-1,3-Dichloropropene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Cyclohexane	--	--	< 5	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane (Methylene bromide)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Dichlorodifluoromethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Ethylbenzene	--	5	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
Hexachlorobutadiene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Iodomethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Isopropylbenzene (Cumene)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
m,p-Xylenes	--	--	NA	NA	NA	NA	< 5 UL	< 5	< 5 UJ	< 5	< 5
Methyl isobutyl ketone (4-Methyl-2-pentanone)	--	--	< 10	< 10	< 10	< 10	< 10	< 10	< 10 UJ	< 10	< 10
Methylene chloride (Dichloromethane)	5870	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Naphthalene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
n-Butylbenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
n-Propylbenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
o-Xylene	--	--	NA	NA	NA	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
sec-Butylbenzene (2-Phenylbutane)	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Styrene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
tert-Butylbenzene	--	--	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
Tetrachloroethene (PCE)	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Toluene	--	5	< 5	< 5	< 5	< 5	< 5 UL	< 5	< 5 UJ	< 5	< 5
trans-1,2-Dichloroethene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
trans-1,3-Dichloropropene	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
trans-1,4-Dichlorobutene	--	--	< 50	< 50	< 50	< 50	< 50	< 50	< 50 UJ	< 50	< 50
Trichloroethene (TCE)	--	5	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Trichlorofluoromethane	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Vinyl Acetate	--	--	< 10	NA	NA	NA	NA	< 10	< 10 UJ	< 10	< 10
Vinyl Chloride	--	--	< 5	< 5	< 5	< 5	< 5	< 5	< 5 UJ	< 5	< 5
Xylenes, Total	--	--	< 5	< 5	< 5	< 5	NA	NA	NA	NA	NA

Notes:
Analytical methods vary per sampling event and are listed below.
pH - EPA 150.1, SM 4500HB
Temperature - EPA 170.1, SM 2550B
Turbidity - EPA 180.1
Ammonia Nitrogen - EPA 350.1, SM 4500NH3 B/CM
Anions - EPA 300.0, EPA 353.3, EPA 354.1
Biological Oxygen Demand (BOD) - EPA 405.1, SM 5210B
Chemical Oxygen Demand (COD) - EPA 410.1, EPA 410.4, SM 5220D
Cyanide - EPA 335.4
Mercury - EPA 200.7, EPA 245.1, EPA 1631 Low Level
Phenol - EPA 420.4
Phosphorus - EPA 300.0, EPA 365.1, SM4500P
Semi-Volatile Organic Compounds - EPA 625, SW846 8270C
Total Dissolved Solids (TDS) - EPA 160.1, 1-1750-85, SM2540C

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008	3/25/2009	6/24/2009	9/21/2009	12/21/2009
Sample Type:	Requirements	Requirements	Sample	Sample	Duplicate	Sample	Sample	Sample	Sample	Sample	Sample

Total Kjeldahl Nitrogen - EPA 351.2, EPA 351.3, SM 4500
Total Metals - EPA 200.7, EPA 200.8
Total Organic Carbon (TOC) - SM 5310B, SM 5310C, SW846 9060
Total Suspended Solids (TSS) - EPA 160.2, I-3765-85, SM2540D
Volatile Organic Compounds - EPA 624, SW846 8260B

Data Flag Definitions:
J = Estimated value based on QC data
JB = Estimated, result may be biased high or false positive based on blank data
JQ = Estimated value; reported between the CRDL and MDL
NA = Not Analyzed
UJ = Undetected; the reported quantitation limit is approximate
UL = Undetected with a possible low bias
-- = Regulatory requirement not established for this constituent

Prepared by/Date: CLC 3/18/10
Checked by/Date: RMB 3/18/10

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date: / Sample Type:	ROD Requirements	KPDES Requirements	Effluent 3/7/2007 Sample	Effluent 6/28/2007 Sample	Effluent 9/14/2007 Sample	Effluent 12/17/2007 Sample	Effluent 3/3/2008 Sample	Effluent 6/30/2008 Sample	Effluent 6/30/2008 Duplicate	Effluent 9/29/2008 Sample	Effluent 12/17/2008 Sample
FIXEDBASE LABORATORY ANALYSIS:											
pH, pH units											
pH	--	--	7.6	7.87	7.52	8.18 J	7.7	NA	NA	NA	7.9
Temperature, deg Celcius											
Temperature	--	--	NA	22.9	21.3	20	NA	NA	NA	NA	NA
Turbidity, NTU											
Turbidity	--	--	<1	<1	<1	1.1	0.43	NA	NA	NA	0.44 JH
Ammonia Nitrogen, mg/L											
Nitrogen, ammonia (As N)	--	--	<0.1	<0.08	<0.1	0.2	0.86	NA	NA	NA	0.27 JQ
Anions, mg/L											
Nitrogen, nitrate	--	--	<1.5	2.2	<0.5	0.55	0.82	NA	NA	NA	NA
Nitrogen, Nitrate+Nitrite	--	--	<2.6	2.2	<0.5	<0.26	1.1	NA	NA	NA	NA
Nitrogen, nitrite	--	--	1.2	<0.75	<2	<0.15	<0.50	NA	NA	NA	NA
Biochemical Oxygen Demand (BOD), mg/L											
Biochemical Oxygen Demand (BOD)	--	--	<5	28	<5	<5	<2.4	<3.6	<3.5	<3.6	<3.6
Chemical Oxygen Demand (COD), mg/L											
Chemical Oxygen Demand (COD)	--	--	<10	36	54	<10	<50.0	48.7	48.7	64.6	60.1
Cyanide, mg/L											
Cyanide	--	0.005	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Mercury, Total, ug/L											
Mercury	--	0.012	<0.2	<0.2	<0.2	<0.2	0.00396	0.00266	0.00296	0.0076	0.00137
Phosphorus, mg/L											
Ortho Phosphorus	--	--	<1.6	<0.2	<0.2	<0.8	NA	NA	NA	NA	NA
Phosphorus, Total	--	--	0.074	0.096	0.13	0.089	<0.10	NA	NA	NA	<0.10
Semi-Volatile Organic Compounds, ug/L											
1,2,4-Trichlorobenzene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	--	5	<10	<10	NA	<10	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	--	--	<10	<10	NA	<10	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	--	5	<10	<10	NA	<10	<5	<5	<5	<5	<5
2,4,5-Trichlorophenol	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2,4,6-Trichlorophenol	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2,4-Dichlorophenol	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2,4-Dimethylphenol	4570	5	<10	<10	<10	<10	<5	<5	<5	<5	<5
2,4-Dinitrophenol	--	--	<50	<10	<50	<51	<28	<29	<29	<29	<28
2,4-Dinitrotoluene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2,6-Dichlorophenol	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/7/2007	6/28/2007	9/14/2007	12/17/2007	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Duplicate	Sample	Sample
2,6-Dinitrotoluene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2-Chloronaphthalene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2-Chlorophenol	23	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2-Methylnaphthalene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2-Methylphenol (o-Cresol)	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
2-Nitroaniline	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
2-Nitrophenol	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
3,3'-Dichlorobenzidine	--	--	<50	<10	<50	<51	<5	<5	<5	<5	<5
3-Methylphenol & 4-Methylphenol	--	--	<10	NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
4,6-Dinitro-2-Methylphenol	--	--	<50	<10	<50	<51	<14	<14	<14	<14	<14
4-Bromophenyl phenyl ether	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
4-Chloro-3-Methylphenol	--	--	<20	<10	<20	<20	<5	<5	<5	<5	<5
4-Chloroaniline	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
4-Chlorophenyl phenyl ether	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
4-Methylphenol (p-Cresol)	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
4-Nitroaniline	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
4-Nitrophenol	--	--	<50	<10	<50	<51	<9	<10	<10	<10	<9
Acenaphthene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Acenaphthylene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
alpha-Terpineol	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
Aniline	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
Anthracene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Benzidine	--	--	<50	<36	<50	<51	<57	<58	<57	<57	<57
Benzo(a)anthracene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Benzo(a)pyrene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Benzo(b)fluoranthene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Benzo(g,h,i)perylene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Benzo(k)fluoranthene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Benzoic acid	--	--	NA	NA	NA	NA	<28	<29	<29	<29	<28
Benzyl Alcohol	--	--	<20	<10	<20	<20	<5	<5	<5	<5	<5
bis(2-Chloroethoxy)methane	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
bis(2-Chloroethyl)ether	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
bis(2-Chloroisopropyl)ether	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
bis(2-Ethylhexyl)phthalate	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Butyl benzyl phthalate	--	5	<10	<10	<10	<10	<5	<5	<5	<5	<5
Carbazole	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Chrysene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Cresols, Total	--	--	NA	<10	<10	<10	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Dibenzofuran	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Diethyl Phthalate	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Dimethyl phthalate	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Di-n-butyl phthalate	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Di-n-octyl phthalate	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Fluoranthene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date: / Sample Type:	ROD Requirements	KPDES Requirements	Effluent 3/7/2007 Sample	Effluent 6/28/2007 Sample	Effluent 9/14/2007 Sample	Effluent 12/17/2007 Sample	Effluent 3/3/2008 Sample	Effluent 6/30/2008 Sample	Effluent 6/30/2008 Duplicate	Effluent 9/29/2008 Sample	Effluent 12/17/2008 Sample
Fluorene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Hexachlorobenzene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Hexachlorobutadiene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Hexachlorocyclopentadiene	--	--	<10	<10	<10	<10	<14	<14	<14	<14	<14
Hexachloroethane	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Indeno(1,2,3-cd)pyrene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Isophorone	--	--	<10	<10	<10	<10	<5	0.4 JQ	<5	0.3 JQ	<5
Naphthalene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Nitrobenzene	250	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
N-Nitrosodimethylamine	--	--	<10	<10	<10	<10	<5	<5	<5	0.5 JQ	<5
N-Nitrosodi-n-propylamine	11	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
N-Nitrosodiphenylamine	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Pentachlorophenol	--	--	<50	<10	<50	<51	<14	<14	<14	<14	<14
Phenanthrene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Phenol	365000	5	<10	<10	<10	<10	<5	<5	<5	<5	<5
Pyrene	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Pyridine	--	--	<10	<10	<10	<10	<5	<5	<5	<5	<5
Total Dissolved Solids, mg/L											
Total Dissolved Solids	--	--	1800	1400	1700	1400	1560	NA	NA	NA	1440
Total Kjeldahl Nitrogen, mg/L											
Total Kjeldahl Nitrogen	--	--	0.34	1.2 J	1.2	0.72	NA	NA	NA	NA	1.3
Total Metals, mg/L											
Antimony	0.062	1.6	<0.01	<0.01	<0.005	<0.005	<0.0010	0.00063	0.00061	0.00087 JQ	0.00073 JQ
Arsenic	0.011	0.05	<0.01	<0.01	<0.1	<0.1	<0.0020	0.0019	0.0023	<0.0020	0.0011 JQ
Barium	0.231	--	0.058	0.04	0.05	0.04	0.0567	0.0464	0.0553	0.0624	0.0558
Beryllium	--	0.0053	<0.01	<0.01	<0.005	<0.005	<0.00020	0.00026	0.00029	<0.00050	<0.00050
Cadmium	--	0.0011	<0.01	<0.01	<0.005	<0.005	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050
Calcium	--	--	144	100	120	136	137	115	127	142	124
Chromium	0.011	0.011	<0.01	<0.01	<0.005	<0.005	<0.0150	0.0048 JQ	0.0044 JQ	0.0047 JQ	0.004 JQ
Copper	--	0.012	<0.01	<0.01	<0.005	<0.005	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100
Iron	--	1	0.106	0.09	0.1	0.1	<0.200	<0.200	<0.200	0.116 JQ	0.0605 JQ
Lead	--	0.0032	<0.01	<0.01	<0.005	<0.005	<0.0010	0.0001 JQ	0.000086 JQ	0.00016 JQ	0.00006 JQ
Magnesium	--	--	144	104	110	128	126	111	120	143	117
Manganese	--	--	0.06	0.5	1.6	0.39	0.41	0.287 J	0.68 J	0.968	1.14
Nickel	--	0.16	0.013	0.02	0.02	0.01	0.0151	0.0191	0.0227	0.0304	0.0243
Selenium	--	0.005	<0.05	<0.05	<0.05	<0.025	0.0031 JQ	0.0061 JQ	0.0064 JQ	0.00031 JQ	0.00033 JQ
Silver	--	0.00012	<0.01	<0.01	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Thallium	0.011	0.04	<0.05	<0.05	<0.05	<0.025	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	--	0.11	0.01	<0.01	0.03	<0.005	<0.0200	<0.0200	<0.0200	0.0148 JQ	<0.0200
Total Organic Carbon (TOC), mg/L											
Total Organic Carbon (TOC)	--	--	12	16	26	NA	11.7	15.3	15.1	20.4	17.7

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/7/2007	6/28/2007	9/14/2007	12/17/2007	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Duplicate	Sample	Sample
Total Suspended Solids (TSS), mg/L											
Total Suspended Solids	--	--	<5	<1.7	<5	5	<12.0	NA	NA	NA	<20.0
Volatile Organic Compounds, ug/L											
1,1,1,2-Tetrachloroethane	--	--	<10	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloropropane	--	--	<5	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloropropene	--	--	NA	<5	<5	<5	<5	<5	<5	<5	<5
1,2,3-Trichlorobenzene	--	--	<5	NA	NA	NA	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	--	--	<10	<5	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-Chloropropane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane (Ethylene dibromide)	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	--	5	<10	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	--	--	<10	<5	<5	<5	<5	<5	<5	<5	<5
1,3-Dichloropropane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	--	5	<10	<5	<5	<5	<5	<5	<5	<5	<5
2,2-Dichloropropane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Butanone (Methyl ethyl ketone)	--	--	<10	<25	<25	26	<10	<10	<10	<10	<10
2-Chloroethyl vinyl ether	--	--	<5	<5	<5	<5	<10	<10 UJ	<10 UJ	<10	<10
2-Chlorotoluene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	--	--	<10	<25	<25	<25	<10	<10	<10	<10	<10
4-Chlorotoluene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
4-Isopropyltoluene (Cymene)	--	--	NA	NA	NA	NA	<5	<5	<5	<5	<5
Acetone	--	--	<5	<25	<25	<25	<20	<20	<20	<20	<20
Acrolein	--	--	<10	<25	<25	<25	<50	<50	<50	<50	<50
Acrylonitrile	--	--	<10	<5	<5	<5	<50	<50	<50	<50	<50
Benzene	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromobenzene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Bromoform (Tribromomethane)	--	--	<5	<5	<5	<5	<5	<5	<5	<5	1 JQ
Bromomethane (Methyl bromide)	--	--	<10	<5	<5	<5	<5	<5	<5	<5	<5
Carbon disulfide	--	--	<10	<5	<5	<5	<5	<5	<5	<5	<5
Carbon tetrachloride	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobromomethane	--	--	<10	<5	<5	<5	NA	NA	NA	NA	NA
Chlorodibromomethane	--	--	NA	<5	<5	<5	<5	<5	<5	<5	<5
Chloroethane	--	--	<10	<5	<5	<5	<5	<5	<5	<5	<5

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date: / Sample Type:	ROD Requirements	KPDES Requirements	Effluent 3/7/2007 Sample	Effluent 6/28/2007 Sample	Effluent 9/14/2007 Sample	Effluent 12/17/2007 Sample	Effluent 3/3/2008 Sample	Effluent 6/30/2008 Sample	Effluent 6/30/2008 Duplicate	Effluent 9/29/2008 Sample	Effluent 12/17/2008 Sample
Chloroform	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chloromethane (Methyl chloride)	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cyclohexane	--	--	NA	NA	NA	NA	<5	NA	NA	NA	NA
Dibromodichloromethane	--	--	<5	NA	NA	NA	NA	NA	NA	NA	NA
Dibromomethane (Methylene bromide)	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Dichlorodifluoromethane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Hexachlorobutadiene	--	--	<10	NA	NA	NA	<5	<5	<5	<5	<5
Iodomethane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Isopropylbenzene (Cumene)	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
m,p-Xylenes	--	--	<5	NA	NA	NA	NA	NA	NA	NA	<5
Methyl isobutyl ketone (4-Methyl-2-pentanone)	--	--	<10	<25	<25	<25	<10	<10	<10	<10	<10
Methylene chloride (Dichloromethane)	5870	5	<10	<25	<10	<10	<5	<5	<5	<5	<5
Naphthalene	--	--	<10	NA	NA	NA	<5	<5	<5	<5	<5
n-Butylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
n-Propylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
o-Xylene	--	--	<5	<5	<5	<5	NA	NA	NA	<5	<5
sec-Butylbenzene (2-Phenylbutane)	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Styrene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
tert-Butylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene (PCE)	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Toluene	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,4-Dichlorobutene	--	--	NA	NA	NA	NA	<50	<50	<50	<50	<50
Trichloroethene (TCE)	--	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichlorofluoromethane	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	--	--	<10	<5	<5	<5	<10	ND (a)	ND (a)	ND (a)	ND (a)
Vinyl Chloride	--	--	<10	<5	<2	<2	<5	<5	<5	<5	<5
Xylenes, Total	--	--	NA	<10	<10	<10	<5	<5	<5	<5	NA

Notes:
-- = Discharge requirement not established for this constituent
[ ] = Exceeds discharge criteria
Non-detected values with reporting limits greater than the discharge requirement were compared to their method detection limits (MDLs). The MDLs were below or equal to the discharge requirement.

Analytical methods vary per sampling event and are listed below:
pH - EPA 150.1, SM 4500HB
Temperature - EPA 170.1, SM 2550B
Turbidity - EPA 180.1
Ammonia Nitrogen - EPA 350.1, SM 4500NH3B/CM

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location:			Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Date:	ROD	KPDES	3/7/2007	6/28/2007	9/14/2007	12/17/2007	3/3/2008	6/30/2008	6/30/2008	9/29/2008	12/17/2008
Sample Type:	Requirements	Requirements	Sample	Sample	Sample	Sample	Sample	Sample	Duplicate	Sample	Sample

Anions - EPA 300.0, EPA 353.3, EPA 354.1
Biochemical Oxygen Demand (BOD) - EPA 405.1, SM 5210B
Chemical Oxygen Demand (COD) - EPA 410.4, SM 5220D
Cyanide - EPA 335.4
Mercury - EPA 200.7, EPA 245.1
Phosphorus - EPA 300.0, EPA 365.1, SM4500P
Semi-Volatile Organic Compounds - EPA 625, SW846 8270C
Total Dissolved Solids (TDS) - EPA 160.1, 1-1750-85
Total Kjeldahl Nitrogen - EPA 351.3, SM 4500
Total Metals - EPA 200.7, EPA 200.8
Total Organic Carbon (TOC) - SM 5310C, SW846 9060
Total Suspended Solids (TSS) - EPA 160.2, I-3765-85
Volatile Organic Compounds - EPA 624, SW846 8260B

Laboratory analysis by Microbac Labs Louisville, KY (2007)
Laboratory analysis by Lancaster Labs Lancaster, PA (2008)

Data Flag Definitions:

(a) = Vinyl Acetate was not detected in the sample based on an examination of GC/MS extracted ion current profiles at the appropriate retention time.
J = Estimated value based on QC data
JH = Estimated value, biased high based on QC data
JQ = Estimated value; reported between the CRDL and MDL
NA = Not Analyzed
ND = Not Detected

Prepared by/Date: RMB 3/2/09
Checked by/Date: JAH 3/2/09

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 1/4/2006	Effluent 3/29/2006	Effluent 5/31/2006	Effluent 9/6/2006	Effluent 12/15/2006	Effluent 3/7/2007	Effluent 6/28/2007
Semi-Volatile Organic Compounds - ug/L									
1,2,4-Trichlorobenzene	--	--	<10	<10	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	--	5	<10	<10	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	--	--	<10	<10	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	--	5	<10	<10	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	--	--	<10	<10	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol	--	--	<10	<10	<10	<10	<10	<10	<10
2,4-Dichlorophenol	--	--	<10	<10	<10	<10	<10	<10	<10
2,4-Dimethylphenol	4570	5	<10	<10	<10	<10	<10	<10	<10
2,4-Dinitrophenol	--	--	<10	<10	<10	<10	<10	<50	<10 UJ
2,4-Dinitrotoluene	--	--	<10	<10	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	--	--	<10	<10	<10	<10	<10	<10	<10
2-Chloronaphthalene	--	--	<10	<10	<10	<10	<10	<10	<10
2-Chlorophenol	23	--	<10	<10	<10	<10	<10	<10	<10
2-Methylnaphthalene	--	--	<10	<10	<10	<10	<10	<10	<10
2-Methylphenol (o-Cresol)	--	--	<10	<10	<10	<10	<10	<10	<10
2-Nitrophenol	--	--	<10	<10	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	--	--	<10	<10	<10	<10	<10	<50	<10 UJ
3-Methylphenol & 4-Methylphenol	--	--	<10	<10	<10	<10	<10	<10	NA
4,6-Dinitro-2-Methylphenol	--	--	<10	<10	<10	<10	<10	<50	<10 UJ
4-Bromophenyl phenyl ether	--	--	<10	<10	<10	<10	<10	<10	<10
4-Chloro-3-Methylphenol	--	--	<10	<10	<10	<10	<10	<20	<10 UJ
4-Chlorophenyl phenyl ether	--	--	<10	<10	<10	<10	<10	<10	<10
4-Nitrophenol	--	--	<10	<10	<10	<10	<10	<50	<10 UJ
Acenaphthene	--	--	<10	<10	<10	<10	<10	<10	<10
Acenaphthylene	--	--	<10	<10	<10	<10	<10	<10	<10
Anthracene	--	--	<10	<10	<10	<10	<10	<10	<10
Benzidine	--	--	<10	<10	<10	<10	<10	<50	<36 UJ
Benzo(a)anthracene	--	--	<10	<10	<10	<10	<10	<10	<10
Benzo(a)pyrene	--	--	<10	<10	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	--	--	<10	<10	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	--	--	<10	<10	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	--	--	<10	<10	<10	<10	<10	<10	<10
Benzyl Alcohol	--	--	<10	<10	<10	<10	<10	<20	<10
bis(2-Chloroethoxy)methane	--	--	<10	<10	<10	<10	<10	<10	<10
bis(2-Chloroethyl)ether	--	--	<10	<10	<10	<10	<10	<10	<10
bis(2-Chloroisopropyl)ether	--	--	<10	<10	<10	<10	<10	<10	<10
bis(2-Ethylhexyl)phthalate	--	--	<10	<10	<10	<10	<10	<10	<10
Butyl benzyl phthalate	--	5	<10	<10	<10	<10	<10	<10	<10
Carbazole	--	--	<10	<10	<10	<10	<10	<10	<10
Chrysene	--	--	<10	<10	<10	<10	<10	<10	<10
Cresols, Total	--	--	NA	NA	NA	NA	NA	NA	<10
Dibenzo(a,h)anthracene	--	--	<10	<10	<10	<10	<10	<10	<10
Dibenzofuran	--	--	<10	<10	<10	<10	<10	<10	<10
Diethyl Phthalate	--	--	<10	<10	<10	<10	<10	<10	<10

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 1/4/2006	Effluent 3/29/2006	Effluent 5/31/2006	Effluent 9/6/2006	Effluent 12/15/2006	Effluent 3/7/2007	Effluent 6/28/2007
Dimethyl phthalate	--	--	<10	<10	<10	<10	<10	<10	<10
Di-n-butyl phthalate	--	--	<10	<10	<10	<10	<10	<10	<10
Di-n-octyl phthalate	--	--	<10	<10	<10	<10	<10	<10	<10
Fluoranthene	--	--	<10	<10	<10	<10	<10	<10	<10
Fluorene	--	--	<10	<10	<10	<10	<10	<10	<10
Hexachlorobenzene	--	--	<10	<10	<10	<10	<10	<10	<10
Hexachlorobutadiene	--	--	<10	<10	<10	<10	<10	<10	<10
Hexachlorocyclopentadiene	--	--	<10	<10	<10	<10	<10	<10	<10
Hexachloroethane	--	--	<10	<10	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	--	--	<10	<10	<10	<10	<10	<10	<10
Isophorone	--	--	<10	<10	<10	<10	<10	<10	<10
Naphthalene	--	--	<10	<10	<10	<10	<10	<10	<10
Nitrobenzene	250	--	<10	<10	<10	<10	<10	<10	<10
N-Nitrosodimethylamine	--	--	<10	<10	<10	<10	<10	<10	<10
N-Nitrosodi-n-propylamine	11	--	<10	<10	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine	--	--	<10	<10	<10	<10	<10	<10	<10
Pentachlorophenol	--	--	<10	<10	<10	<10	<10	<50	<10 UJ
Phenanthrene	--	--	<10	<10	<10	<10	<10	<10	<10
Phenol	365000	5	<10	<10	<10	<10	<10	<10	<10
Pyrene	--	--	<10	<10	<10	<10	<10	<10	<10
Pyridine	--	--	<10	<10	<10	<10	<10	<10	<10
Total Metals - mg/L									
Antimony	0.062	1.6	<0.01	<0.01	0.01	0.026	<0.01	<0.01	<0.01
Arsenic	0.011	0.05	<0.01	<0.02	<0.1	<0.1	<0.01	<0.01	<0.01
Barium	0.231	--	0.08	0.07	0.06	0.07	0.059	0.058	0.04
Beryllium	--	0.0053	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	--	0.0011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Calcium	--	--	110	125	84.6	118	118	144	100
Chromium	0.011	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	--	0.012	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	--	1	0.14	0.05	0.09	0.16	<0.1	0.106	0.09
Lead	--	0.0032	<0.02	<0.02	<0.01	<0.01	<0.1	<0.01	<0.01
Magnesium	--	--	100	120	81	107	112	144	104
Manganese	--	--	0.23	0.06	0.09	0.23	0.02	0.06	0.5
Mercury	--	0.000012	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	--	0.16	0.02	0.01	0.01	0.01	0.012	0.013	0.02
Selenium	--	0.005	<0.01	<0.1	<0.1	<0.01	<0.05	<0.05	<0.05
Silver	--	0.00012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	0.011	0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc	--	0.11	0.02	0.03	<0.01	<0.01	0.013	0.01	<0.01
Volatile Organic Compounds - ug/L									
1,1,1,2-Tetrachlorroethane	--	--	<5	<5	<5	<5	<5	<10	<5
1,1,1-Trichloroethane	--	--	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	--	--	<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	--	5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	--	5	<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	--	5	<5	<5	<5	<5	<5	<5	<5

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 1/4/2006	Effluent 3/29/2006	Effluent 5/31/2006	Effluent 9/6/2006	Effluent 12/15/2006	Effluent 3/7/2007	Effluent 6/28/2007
1,1-Dichloropropane	--	--	<5	<5	<5	<5	<5	<5	NA
1,1-Dichloropropene	--	--	NA	NA	NA	NA	NA	NA	<5
1,2,3-Trichlorobenzene	--	--	<5	<5	<5	<5	<5	<5	NA
1,2,3-Trichloropropane	--	--	<5	<5	<5	<5	<5	<5	<5
1,2,4-Trichlorobenzene	--	--	<5	<5	<5	<5	<5	<10	<5
1,2,4-Trimethylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromo-3-Chloropropane	--	--	<5	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane (Ethylene dibromide)	--	--	<5	<5	<5	<5	<5	<5	<5
1,2-Dichlorobenzene	--	5	<5	<5	<5	<5	<5	<10	<5
1,2-Dichloroethane	--	5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	--	5	<5	<5	<5	<5	<5	<5	<5
1,3,5-Trimethylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5
1,3-Dichlorobenzene	--	--	<5	<5	<5	<5	<5	<10	<5
1,3-Dichloropropane	--	--	<5	<5	<5	<5	<5	<5	<5
1,4-Dichlorobenzene	--	5	<5	<5	<5	<5	<5	<10	<5
2,2-Dichloropropane	--	--	<5	<5	<5	<5	<5	<5	<5
2-Butanone (Methyl ethyl ketone)	--	--	<25	<25	<5	<25	<25	<10	<25
2-Chloroethyl vinyl ether	--	--	<5	<5	<5	<5	<5	<5	<5
2-Chlorotoluene	--	--	<5	<5	<5	<5	<5	<5	<5
2-Hexanone	--	--	<25	<25	<25	<5	<25	<10	<25
2-Phenylbutane	--	--	<5	<5	<5	<5	<5	<5	<5
4-Chlorotoluene	--	--	<5	<5	<5	<5	<5	<5	<5
4-Isopropltoluene (Cymene)	--	--	<5	<5	<5	<5	<5	NA	NA
Acetone	--	--	<25	600	66	<25	<25	<5	<25
Acrolein	--	--	<25	<25	<25	<25	<25	<10	<25
Acrylonitrile	--	--	<5	<5	<5	<5	<5	<10	<5
Benzene	--	5	<5	<5	<5	<5	<5	<5	<5
Bromobenzene	--	--	<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane	--	--	<5	<5	<5	<5	<5	<5	<5
Bromoform (Tribromomethane)	--	--	<5	<5	<5	<5	<5	<5	<5
Bromomethane (Methyl bromide)	--	--	<5	<5	<5	<5	<5	<10	<5
Carbon disulfide	--	--	<5	<5	<5	<5	<5	<10	<5
Carbon tetrachloride	--	--	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	--	--	<5	<5	<5	<5	<5	<5	<5
Chlorobromomethane	--	--	<5	<5	<5	<5	<5	<10	<5
Chlorodibromomethane	--	--	NA	NA	NA	NA	NA	NA	<5
Chloroethane	--	--	<5	<5	<5	<5	690	<10	<5
Chloroform	--	--	<5	<5	6	<5	<5	<5	<5
Chloromethane (Methyl chloride)	--	--	<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	--	--	<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	--	--	<5	<5	<5	<5	<5	<5	<5
Dibromodichloromethane	--	--	<5	<5	<5	<5	<5	<5	NA
Dibromomethane (Methylene bromide)	--	--	<5	<5	<5	<5	<5	<5	<5
Dichlorodifluoromethane	--	--	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	--	5	<5	<5	<5	<5	<5	<5	<5
Hexachlorobutadiene	--	--	<5	<5	<5	<5	<5	<10	NA
Iodomethane	--	--	<5	<5	<5	<5	<5	<5	<5
Isopropylbenzene (Cumene)	--	--	<5	<5	<5	<5	<5	<5	<5
m,p-Xylenes	--	--	<10	<10	<10	<10	<10	<5	NA

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 1/4/2006	Effluent 3/29/2006	Effluent 5/31/2006	Effluent 9/6/2006	Effluent 12/15/2006	Effluent 3/7/2007	Effluent 6/28/2007
Methyl isobutyl ketone (4-Methyl-2-pentanone)	--	--	<25	<25	<25	<25	<25	<10	<25
Methylene chloride (Dichloromethane)	5870	5	<10	<10	<10	<10	<10	<10	<25
Naphthalene	--	--	<5	<5	<5	<5	<5	<10	NA
n-Butylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5
n-Propylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5
o-Xylene	--	--	<5	<5	<5	<5	<5	<5	<5
Styrene	--	--	<5	<5	<5	<5	<5	<5	<5
tert-Butylbenzene	--	--	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethene (PCE)	--	5	<5	<5	<5	<5	<5	<5	<5
Toluene	--	5	<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	--	--	<5	<5	<5	<5	<5	<5	<5
trans-1,3-Dichloropropene	--	--	<5	<5	<5	<5	<5	<5	<5
Trichloroethene (TCE)	--	5	<5	<5	<5	<5	<5	<5	<5
Trichlorofluoroemthane	--	--	<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate	--	--	<5	<5	<5	<5	<5	<10	<5
Vinyl Chloride	--	--	<2	<2	<2	<2	<2	<10	<5
Xylenes, Total	--	--	NA	NA	NA	NA	NA	NA	<10
GENERAL INORGANICS:									
Ammonia Nitrogen - mg/L									
Nitrogen, ammonia (As N)	--	--	1.8	<0.05	<0.05	<0.1	0.31	<0.1	<0.08 UJ
Anions - mg/L									
Nitrogen, nitrate	--	--	1.2	0.47	1.5	0.17	1.6	1.2	<0.75
Nitrogen, nitrite	--	--	<0.15	<0.15	<1.1	<0.15	<0.15	<1.5	2.2
Nitrogen, Nitrite & Nitrate	--	--	1.2	<0.5	1.5	<0.26	1.6	<2.6	2.2
Biochemical Oxygen Demand (BOD) - mg/L									
Biochemical Oxygen Demand (BOD)	--	--	10	<5	<5	<5	<5	<5	28
Chemical Oxygen Demand (COD) - mg/L									
Chemical Oxygen Demand (COD)	--	--	50	25	310	34	42	<10	36
Cyanide - mg/L									
Cyanide	--	0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001
pH - pH Units									
pH	--	--	7.5	7.7	7.5	7.8	7	7.6	7.87
Phosphorus - mg/L									
Ortho Phosphorus	--	--	<0.16	<0.16	2.5	<0.2	<0.9	<1.6	<0.2
Phosphorus, Total	--	--	0.1	0.14	0.12	0.14	0.099	0.074	0.096
Temperature - deg Celcius									
Temperature	--	--	NA	NA	NA	NA	NA	NA	22.9
Total Dissolved Solids (TDS) - mg/L									
Total Dissolved Solids	--	--	1500	1500	990	1400	1400	1800	1400

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 1/4/2006	Effluent 3/29/2006	Effluent 5/31/2006	Effluent 9/6/2006	Effluent 12/15/2006	Effluent 3/7/2007	Effluent 6/28/2007
Total Kjeldahl Nitrogen - mg/L									
Total Kjeldahl Nitrogen	--	--	5	0.6	3.9	0.57	0.74	0.34	1.2 J
Total Organic Carbon (TOC) - mg/L									
Total Organic Carbon (TOC)	--	--	19	12.7	13.6	14.4	13.6	12	16
Total Suspended Solids (TSS) - mg/L									
Total Suspended Solids	--	--	<5	<5	<5	<5	<5	<5	<1.7
Turbidity - NTU									
Turbidity	--	--	<0.2	1.3	1	<1	<1	<1	<1

Notes:
NA = Not analyzed
UJ = Undetected; the reported quantitation limit is approximate
Laboratory analysis by Microbac Labs Louisville, KY
-- = Regualtory Requirement not established

Analytical methods vary per sampling event and are listed below:
Semi-Volatile Organic Compounds: EPA 625, SW846 8270C
Total Metals - EPA 200.7, Mercury - EPA 245.1
Volatile Organic Compounds: SW846 8260, SW846 8260B
General Inorganics:
Ammonia Nitrogen - EPA 350.1, EPA 350.2, SM 4500
Anions - EPA 300.0, EPA 353.3, EPA 354.1
Biological Oxygen Demand (BOD) - EPA 405.1, SM 5210B
Chemical Oxygen Demand (COD) - EPA 410.1, EPA 410.4, SM 5220D
Cyanide - EPA 335.2, EPA 335.4
pH - EPA 150.1, SM 4500
Phosphorus - EPA 365.1, EPA 365.3
Temperature - EPA 170.1, SM 2550B
Total Dissolved Solids (TDS) - EPA 160.1, I-1750-85
Total Kjeldahl Nitrogen - EPA 351.3, SM 4500
Total Organic Carbon (TOC) - SM 5310B, SM 5310C, SW846 9060
Total Suspended Solids (TSS) - EPA 160.2, I-3765-85
Turbidity - EPA 180.1

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 9/14/2007	Effluent 12/17/2007
Semi-Volatile Organic Compounds - ug/L				
1,2,4-Trichlorobenzene	--	--	<10	<10
1,2-Dichlorobenzene	--	5	NA	<10
1,3-Dichlorobenzene	--	--	NA	<10
1,4-Dichlorobenzene	--	5	NA	<10
2,4,5-Trichlorophenol	--	--	<10	<10
2,4,6-Trichlorophenol	--	--	<10	<10
2,4-Dichlorophenol	--	--	<10	<10
2,4-Dimethylphenol	4570	5	<10	<10
2,4-Dinitrophenol	--	--	<50 UJ	<51 UJ
2,4-Dinitrotoluene	--	--	<10	<10
2,6-Dinitrotoluene	--	--	<10	<10
2-Chloronaphthalene	--	--	<10	<10
2-Chlorophenol	23	--	<10	<10
2-Methylnaphthalene	--	--	<10	<10
2-Methylphenol (o-Cresol)	--	--	<10	<10
2-Nitrophenol	--	--	<10	<10
3,3'-Dichlorobenzidine	--	--	<50 UJ	<51 UJ
3-Methylphenol & 4-Methylphenol	--	--	NA	NA
4,6-Dinitro-2-Methylphenol	--	--	<50 UJ	<51 UJ
4-Bromophenyl phenyl ether	--	--	<10	<10
4-Chloro-3-Methylphenol	--	--	<20 UJ	<20 UJ
4-Chlorophenyl phenyl ether	--	--	<10	<10
4-Nitrophenol	--	--	<50 UJ	<51 UJ
Acenaphthene	--	--	<10	<10
Acenaphthylene	--	--	<10	<10
Anthracene	--	--	<10	<10
Benzidine	--	--	<50 UJ	<51 UJ
Benzo(a)anthracene	--	--	<10	<10
Benzo(a)pyrene	--	--	<10	<10
Benzo(b)fluoranthene	--	--	<10	<10
Benzo(g,h,i)perylene	--	--	<10	<10
Benzo(k)fluoranthene	--	--	<10	<10
Benzyl Alcohol	--	--	<20 UJ	<20 UJ
bis(2-Chloroethoxy)methane	--	--	<10	<10
bis(2-Chloroethyl)ether	--	--	<10	<10
bis(2-Chloroisopropyl)ether	--	--	<10	<10
bis(2-Ethylhexyl)phthalate	--	--	<10	<10
Butyl benzyl phthalate	--	5	<10	<10
Carbazole	--	--	<10	<10
Chrysene	--	--	<10	<10
Cresols, Total	--	--	<10	<10
Dibenzo(a,h)anthracene	--	--	<10	<10
Dibenzofuran	--	--	<10	<10
Diethyl Phthalate	--	--	<10	<10

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 9/14/2007	Effluent 12/17/2007
Dimethyl phthalate	--	--	<10	<10
Di-n-butyl phthalate	--	--	<10	<10
Di-n-octyl phthalate	--	--	<10	<10
Fluoranthene	--	--	<10	<10
Fluorene	--	--	<10	<10
Hexachlorobenzene	--	--	<10	<10
Hexachlorobutadiene	--	--	<10	<10
Hexachlorocyclopentadiene	--	--	<10	<10
Hexachloroethane	--	--	<10	<10
Indeno(1,2,3-cd)pyrene	--	--	<10	<10
Isophorone	--	--	<10	<10
Naphthalene	--	--	<10	<10
Nitrobenzene	250	--	<10	<10
N-Nitrosodimethylamine	--	--	<10	<10
N-Nitrosodi-n-propylamine	11	--	<10	<10
N-Nitrosodiphenylamine	--	--	<10	<10
Pentachlorophenol	--	--	<50 UJ	<51 UJ
Phenanthrene	--	--	<10	<10
Phenol	365000	5	<10	<10
Pyrene	--	--	<10	<10
Pyridine	--	--	<10	<10
Total Metals - mg/L				
Antimony	0.062	1.6	<0.005	<0.005
Arsenic	0.011	0.05	<0.1	<0.1
Barium	0.231	--	0.05	0.04
Beryllium	--	0.0053	<0.005	<0.005
Cadmium	--	0.0011	<0.005	<0.005
Calcium	--	--	120	136
Chromium	0.011	0.011	<0.005	<0.005
Copper	--	0.012	<0.005	<0.005
Iron	--	1	0.1	0.1
Lead	--	0.0032	<0.005	<0.005
Magnesium	--	--	110	128
Manganese	--	--	1.6	0.39
Mercury	--	0.000012	<0.0002	<0.0002
Nickel	--	0.16	0.02	0.01
Selenium	--	0.005	<0.05	<0.025
Silver	--	0.00012	<0.005	<0.005
Thallium	0.011	0.04	<0.05	<0.025
Zinc	--	0.11	0.03	<0.005
Volatile Organic Compounds - ug/L				
1,1,1,2-Tetrachlorroethane	--	--	<5	<5
1,1,1-Trichloroethane	--	--	<5	<5
1,1,2,2-Tetrachloroethane	--	--	<5	<5
1,1,2-Trichloroethane	--	5	<5	<5
1,1-Dichloroethane	--	5	<5	<5
1,1-Dichloroethene	--	5	<5	<5

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 9/14/2007	Effluent 12/17/2007
1,1-Dichloropropane	--	--	NA	NA
1,1-Dichloropropene	--	--	<5	<5
1,2,3-Trichlorobenzene	--	--	NA	NA
1,2,3-Trichloropropane	--	--	<5	<5
1,2,4-Trichlorobenzene	--	--	<5	<5
1,2,4-Trimethylbenzene	--	--	<5	<5
1,2-Dibromo-3-Chloropropane	--	--	<5	<5
1,2-Dibromoethane (Ethylene dibromide)	--	--	<5	<5
1,2-Dichlorobenzene	--	5	<5	<5
1,2-Dichloroethane	--	5	<5	<5
1,2-Dichloropropane	--	5	<5	<5
1,3,5-Trimethylbenzene	--	--	<5	<5
1,3-Dichlorobenzene	--	--	<5	<5
1,3-Dichloropropane	--	--	<5	<5
1,4-Dichlorobenzene	--	5	<5	<5
2,2-Dichloropropane	--	--	<5	<5
2-Butanone (Methyl ethyl ketone)	--	--	<25	26
2-Chloroethyl vinyl ether	--	--	<5	<5
2-Chlorotoluene	--	--	<5	<5
2-Hexanone	--	--	<25	<25
2-Phenylbutane	--	--	<5	<5
4-Chlorotoluene	--	--	<5	<5
4-Isopropltoluene (Cymene)	--	--	NA	NA
Acetone	--	--	<25	<25
Acrolein	--	--	<25	<25
Acrylonitrile	--	--	<5	<5
Benzene	--	5	<5	<5
Bromobenzene	--	--	<5	<5
Bromodichloromethane	--	--	<5	<5
Bromoform (Tribromomethane)	--	--	<5	<5
Bromomethane (Methyl bromide)	--	--	<5	<5
Carbon disulfide	--	--	<5	<5
Carbon tetrachloride	--	--	<5	<5
Chlorobenzene	--	--	<5	<5
Chlorobromomethane	--	--	<5	<5
Chlorodibromomethane	--	--	<5	<5
Chloroethane	--	--	<5	<5
Chloroform	--	--	<5	<5
Chloromethane (Methyl chloride)	--	--	<5	<5
cis-1,2-Dichloroethene	--	--	<5	<5
cis-1,3-Dichloropropene	--	--	<5	<5
Dibromodichloromethane	--	--	NA	NA
Dibromomethane (Methylene bromide)	--	--	<5	<5
Dichlorodifluoromethane	--	--	<5	<5
Ethylbenzene	--	5	<5	<5
Hexachlorobutadiene	--	--	NA	NA
Iodomethane	--	--	<5	<5
Isopropylbenzene (Cumene)	--	--	<5	<5
m,p-Xylenes	--	--	NA	NA

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 9/14/2007	Effluent 12/17/2007
Methyl isobutyl ketone (4-Methyl-2-pentanone)	--	--	<25	<25
Methylene chloride (Dichloromethane)	5870	5	<10	<10
Naphthalene	--	--	NA	NA
n-Butylbenzene	--	--	<5	<5
n-Propylbenzene	--	--	<5	<5
o-Xylene	--	--	<5	<5
Styrene	--	--	<5	<5
tert-Butylbenzene	--	--	<5	<5
Tetrachloroethene (PCE)	--	5	<5	<5
Toluene	--	5	<5	<5
trans-1,2-Dichloroethene	--	--	<5	<5
trans-1,3-Dichloropropene	--	--	<5	<5
Trichloroethene (TCE)	--	5	<5	<5
Trichlorofluoromthane	--	--	<5	<5
Vinyl Acetate	--	--	<5	<5
Vinyl Chloride	--	--	<2	<2
Xylenes, Total	--	--	<10	<10
GENERAL INORGANICS:				
Ammonia Nitrogen - mg/L				
Nitrogen, ammonia (As N)	--	--	<0.1	0.2
Anions - mg/L				
Nitrogen, nitrate	--	--	<2	<0.15
Nitrogen, nitrite	--	--	<0.5	0.55
Nitrogen, Nitrite & Nitrate	--	--	<0.5	<0.26
Biochemical Oxygen Demand (BOD) - mg/L				
Biochemical Oxygen Demand (BOD)	--	--	<5	<5
Chemical Oxygen Demand (COD) - mg/L				
Chemical Oxygen Demand (COD)	--	--	54	<10
Cyanide - mg/L				
Cyanide	--	0.005	<0.01	<0.005
pH - pH Units				
pH	--	--	7.52	8.18 J
Phosphorus - mg/L				
Ortho Phosphorus	--	--	<0.2	NA
Phosphorus, Total	--	--	0.13	0.089
Temperature - deg Celcius				
Temperature	--	--	21.3	20
Total Dissolved Solids (TDS) - mg/L				
Total Dissolved Solids	--	--	1700	1400

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 4: Treatment Plant Quarterly Effluent Sampling Results

Sample Location: / Sample Date:	ROD Requirements	KPDES Requirements	Effluent 9/14/2007	Effluent 12/17/2007
Total Kjeldahl Nitrogen - mg/L				
Total Kjeldahl Nitrogen	--	--	1.2	0.72
Total Organic Carbon (TOC) - mg/L				
Total Organic Carbon (TOC)	--	--	26	NA
Total Suspended Solids (TSS) - mg/L				
Total Suspended Solids	--	--	<5	5
Turbidity - NTU				
Turbidity	--	--	<1	1.1

Notes:
NA = Not analyzed
UJ = Undetected; the reported quantitation limit is approximate
Laboratory analysis by Microbac Labs Louisville, KY
-- = Regualtory Requirement not established

Analytical methods vary per sampling event and are listed below:
Semi-Volatile Organic Compounds: EPA 625, SW846 8270C
Total Metals - EPA 200.7, Mercury - EPA 245.1
Volatile Organic Compounds: SW846 8260, SW846 8260B
General Inorganics:
Ammonia Nitrogen - EPA 350.1, EPA 350.2, SM 4500
Anions - EPA 300.0, EPA 353.3, EPA 354.1
Biological Oxygen Demand (BOD) - EPA 405.1, SM 5210B
Chemical Oxygen Demand (COD) - EPA 410.1, EPA 410.4, SM 5220D
Cyanide - EPA 335.2, EPA 335.4
pH - EPA 150.1, SM 4500
Phosphorus - EPA 365.1, EPA 365.3
Temperature - EPA 170.1, SM 2550B
Total Dissolved Solids (TDS) - EPA 160.1, I-1750-85
Total Kjeldahl Nitrogen - EPA 351.3, SM 4500
Total Organic Carbon (TOC) - SM 5310B, SM 5310C, SW846 9060
Total Suspended Solids (TSS) - EPA 160.2, I-3765-85
Turbidity - EPA 180.1

Prepared by/Date: RMB 2/19/08
Checked by/Date: CLC 2/20/08

Table 2
Treatment Plant Quarterly Effluent Sampling Results 2006

SAMPLE MONTH: / DATE COLLECTED:		ROD Requirements	KPDES Requirements	March 3/18/05	June 6/25/05	Sept 9/9/05	Dec 1/6/06	March 03/29/06	June 5/31/06	Sept 9/6/06	Dec 12/15/06
VOLATILE ORGANIC COMPOUNDS BY SW8260											
PARAMETERS	UNITS										
DICHLORODIFLUOROMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
VINYL CHLORIDE	ug/L		5	<5	<5	<5	<5	<2	<2	<5	<5
CHLOROMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
BROMOMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
CHLOROETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
TRICHLOROFLUOROMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,1-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
METHYLENE CHLORIDE	ug/L			<5	<10	<10	<5	<10	<10	<10	<10
ACETONE	ug/L			<5	<25	<25	<25	<25	66	310	<25
ACROLEIN	ug/L			<5	<25	<25	<25	<25	<25	<25	<25
IODOMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
CARBON DISULFIDE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
ACRYLONITRILE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
TRANS-1,2-DICHLOROETHYLENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,1-DICHLOROETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
VINYL ACETATE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
2-BUTANONE (MEK)	ug/L		5	<50	<5	<5	<5	<25	<5	560	<25
CIS-1,2-DICHLOROETHYLENE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
BROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
CHLOROFORM	ug/L			<5	<5	<5	<5	<5	6	<5	<5
2,2-DICHLOROPROPANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,1,1-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
1,1-DICHLOROPROPYLENE	ug/L		5	12	<5	<5	<5	<5	<5	<5	<5
CARBON TETRACHLORIDE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
BENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2-DICHLOROETHANE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
TRICHLOROETHYLENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
DIBROMOMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2-DICHLOROPROPANE	ug/L	5870	5	<5	<5	<5	<5	<5	<5	<5	<5
BROMODICHLOROMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
2-CHLOROETHYL VINYL ETHER	ug/L			<5	<5	<10	<10	<5	<5	<5	<5
CIS-1,3-DICHLOROPROPYLENE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
4-METHYL-2-PENTANONE (MIBK)	ug/L		5	16	<25	<25	<25	<25	<25	<25	<25
TOLUENE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
TRANS-1,3-DICHLOROPROPYLENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,1,2-TRICHLOROETHANE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
1,3-DICHLOROPROPANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
DIBROMOCHLOROMETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2-DIBROMOETHANE (EDB)	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
TETRACHLOROETHYLENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
2-HEXANONE	ug/L			21	<25	<5	<5	21	<25	<5	<25
1,1,1,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
CHLOROBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1-CHLOROHEXANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
ETHYLBENZENE	ug/L			<5	<5	<5	<5	<5	<5	14	<5
M-XYLENE / P-XYLENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
O-XYLENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
STYRENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
BROMOFORM	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2,3-TRICHLOROPROPANE	ug/L		10	<5	<5	<5	<5	<5	<5	<5	<5
ISOPROPYLBENZENE (CUMENE)	ug/L			<5	<5	<5	<5	<5	<5	<5	<5

Prepared by: E Taylor
Checked by: H Poteet

Table 2
Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	MARCH	JUNE	SEPT	DEC	MARCH	JUNE	SEPT	Jan
DATE COLLECTED:		Requirements	Requirements	3/18/05	6/25/05	9/9/05	1/6/06	3/29/06	5/31/06	9/6/06	12/15/05
VOLATILE ORGANIC COMPOUNDS BY SW8260 continue...											
BROMOBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
TRANS-1,4-DICHLORO-2-BUTENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
N-PROPYLBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-TETRACHLOROETHANE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
2-CHLOROTOLUENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
3-CHLOROTOLUENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
4-CHLOROTOLUENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,3,5-TRIMETHYLBENZENE	ug/L	23		<5	<5	<5	<5	<5	<5	<5	<5
TERT-BUTYLBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2,4-TRIMETHYLBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
SEC-BUTYLBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,3-DICHLOROBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,4-DICHLOROBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
4-ISOPROPYLTOLUENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2-DICHLOROBENZENE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
N-BUTYLBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2-DIBROMO-3-CHLOROPROPANE	ug/L		5	<5	<5	<5	<5	<5	<5	<5	<5
1,2,4-TRICHLOROBENZENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
NAPHTHALENE	ug/L			<5	<5	<5	<5	<5	11	<5	<5
HEXACHLOROBUTADIENE	ug/L			<5	<5	<5	<5	<5	<5	<5	<5
1,2,3-TRICHLOROBENZENE	ug/L			<5	<5	<5	<5	<5	9	<5	<5
DCA SURROGATE RECOVERY	ug/L	4570	10	85%	80%	98%	96%	95%	89%	130%	116%
TOL-D8 SURROGATE RECOVERY	ug/L			87%	97%	113%	84%	106%	94%	91%	99%
BFB SURROGATE RECOVERY	ug/L			87%	86%	107%	92%	100%	102%	100%	106%
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270											
PYRIDINE	ug/L			ND	ND	<10	<10	<10	<10	<10	<10
N-NITROSODIMETHYLAMINE	ug/L			ND	ND	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER	ug/L			<20	<20	<10	<10	<10	<10	<10	<10
PHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-CHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,3-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,4-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,2-DICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZYL ALCOHOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-METHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
HEXACHLOROETHANE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
N-NITROSODI-N-PROPYLAMINE	ug/L	11		<20	<10	<10	<10	<10	<10	<10	<10
3&4-METHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
NITROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
ISOPHORONE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-NITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4-DIMETHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE	ug/L	250		<10	<10	<10	<10	<10	<10	<10	<10
2,4-DICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,6-DICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
NAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-CHLOROANILINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
HEXACHLOROBUTADIENE	ug/L	365000	10	ND	<10	<10	<10	<10	<10	<10	<10
4-CHLORO-3-METHYLPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10

Table 2
Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	MARCH	JUNE	SEPT	DEC	MARCH	JUNE	SEPT	Jan
DATE COLLECTED		Requirements	Requirements	3/18/05	6/25/05	9/9/05	1/6/06	3/29/06	5/31/06	9/6/06	12/15/06
SEMI-VOLATILE ORGANIC COMPOUNDS BY SW8270 continued...											
2-METHYLNAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4,6-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-CHLORONAPHTHALENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10	<50	<50
DIMETHYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
ACENAPHTHYLENE	ug/L	23		<10	<10	<10	<10	<10	<10	<10	<10
2,6-DINITROTOLUENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
ACENAPHTHENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
3-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10	<50	<50
2,4-DINITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-NITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DIBENZOFURAN	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2,4-DINITROTOLUENE	ug/L		5	<10	<10	<10	<10	<10	<10	<10	<10
FLUORENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DIETHYL PHTHALATE	ug/L		5	<10	<10	<10	<10	<10	<10	<10	<10
4-CHLOROPHENYL PHENYL ETHER	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
2-METHYL-4,6-DINITROPHENOL	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-NITROANILINE	ug/L			<50	<50	<50	<50	<10	<10	<50	<50
N-NITROSO-DIPHENYLAMINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
4-BROMOPHENYL PHENYL ETHER	ug/L	4570	10	<10	<10	<10	<10	<10	<10	<10	<10
HEXACHLOROBENZENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
PENTACHLOROPHENOL	ug/L			<50	<10	<10	<10	<10	<10	<10	<10
ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
PHENANTHRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
CARBAZOLE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DI-N-BUTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
FLUORANTHENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZIDINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
PYRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZYL BUTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(A)ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
3,3'-DICHLOROBENZIDINE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
CHRYSENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(B)FLUORANTHENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(K)FLUORANTHENE	ug/L	11		<10	<10	<10	<10	<10	<10	<10	<10
BENZO(A)PYRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
INDENO(1,2,3-C,D)PYRENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
DIBENZO(A,H)ANTHRACENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
BENZO(G,H,I)PERYLENE	ug/L			<10	<10	<10	<10	<10	<10	<10	<10
[Surrogate Rec. - B/N]	ug/L										
NITROBENZENE-D5	ug/L	250		29%	74%	64%	68.00%	62%	26%	51%	66.40%
2-FLUOROBIPHENYL	ug/L			64%	80%	64%	62.00%	56%	22%	66%	76.40%
P-TERPHENYL	ug/L			130%	92%	112%	88.00%	54%	39%	49%	68.00%
[Surrogate Rec. - Acids]	ug/L										
2-FLUOROPHENOL	ug/L			30%	44%	30%	37.00%	26%	10%	27%	30.00%
PHENOL-D6	ug/L			16%	26%	38%	11.00%	20%	7%	14%	25.50%
2,4,6-TRIBROMOPHENOL	ug/L	365000	10	69%	106%	80%	80.00%	73%	3%	90%	72.80%

Prepared by: E Taylor
Checked by: H Poteet

Table 2
Treatment Plant Quarterly Effluent Sampling Results continued...

SAMPLE MONTH:		ROD	KPDES	MARCH	JUNE	SEPT	Jan	MARCH	JUNE	SEPT	Dec
DATE COLLECTED:		Requirements	Requirements	3/18/05	6/25/05	9/9/05	1/6/06	3/29/06	5/31/06	9/6/06	12/15/06
METALS Compound by SW846, 6010 / 7470											
PARAMETERS	UNITS										
Antimony	mg/L	0.062	1.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01
Arsenic	mg/L	0.011	0.05	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.01
Barium	mg/L	0.231		0.075	0.06	0.05	0.08	0.08	0.06	0.09	0.08
Beryllium	mg/L		0.0053	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	mg/L		0.0011	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01
Calcium	mg/L			130	120	140	110	150	110	126	110
Chromium	mg/L	0.011	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	mg/L		0.012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Iron	mg/L		1	0.11	0.13	0.12	0.07	0.17	0.19	0.13	0.14
Lead	mg/L		0.0032	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02
Magnesium	mg/L			120	110	106	94.9	140	115	125	100
Manganese	mg/L			0.02	0.13	0.16	0.02	0.02	0.18	0.94	0.23
Mercury	mg/L		0.000012	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Nickel	mg/L		0.16	<0.01	0.01	0.02	0.01	<0.01	0.02	0.02	0.02
Selenium	mg/L		0.005	<0.05	<0.01	<0.01	0.03	<0.01	<0.01	0.17	<0.01
Silver	mg/L		0.00012	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Thallium	mg/L	0.011	0.04	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05
Zinc	mg/L		0.11	0.02	0.02	0.04	<0.1	<0.01	0.03	<0.01	0.02
GENERAL INORGANICS											
PARAMETERS	UNITS										
BOD	mg/L			<5	<5	<5	<5	<5	41	5	10
COD	mg/L			23	21	22	<10	50	82	52	50
Cyanide total	mg/L			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrogen, Ammonia	mg/L			<1.0	<1.0	1	<1.0	<1.0	1.4	1.9	1.8
Nitrogen, Kjeldahl	mg/L			2.3	2.4	2.6	1	2.86	2.3	3	5
Nitrogen, Nitrate	mg/L			<0.1	0.5	<0.5	1.36	<0.1	0.57	0.81	1.2
Nitrogen, Nitrite	mg/L			0.66	0.5	<0.02	<0.1	0.66	0.57	2	<0.15
Nitrogen, Nitrite, and Nitrate	mg/L			0.66	0.518	<0.05	2.05	2.86	<0.15	1.2	1.2
Organic Carbon total	*mg/L*			15.7	23	12.2	*18*	*14.8*	*16.6*	*18*	*19*
pH	s.u.			7.5	7.61	7.7	7.9	7.5	7.95	7.6	7.5
Phosphate Ortho-	mg/L			<0.2	0.12	0.15	<0.3	<0.80	<0.16	0.15	<0.16
Phosphorus total	mg/L			0.1	0.1	0.2	0.11	0.1	0.11	0.2	0.1
TDS	mg/L			1800	1340	1440	0.12	2100	1600	1600	1500
TSS	mg/L			<5	<5	3	<5	<5	<5	5	<5
Turbidity	NTU			0.46	0.37	0.5	0.7	0.4	1.5	0.4	<0.2

Notes:
NA = Not analyzed
Laboratory analysis by Microbac Labs Louisville,Ky

Prepared by: E Taylor
Checked by: H Poteet